

UNITED STATES BUREAU OF EDUCATION

BULLETIN, 1913, NO. 19

WHOLE NUMBER 529

GERMAN INDUSTRIAL EDUCATION
AND ITS LESSONS FOR THE
UNITED STATES

By

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1913

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, April 24, 1913.

SIR: It is generally conceded that Germany has done more toward adapting industrial education to the needs of the people than has been done in the United States. Conditions in the United States differ widely from conditions in Germany, and the details of adaptation must therefore be different, but the underlying principles are the same. In arriving at an understanding of these principles, and for suggestions in applying them under American conditions, a clear presentation of industrial education in Germany can not fail to be helpful. I therefore recommend that the manuscript prepared by Dr. Holmes Beckwith, and transmitted herewith, be published as a bulletin of this bureau.

Respectfully,

P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.

PREFACE.

The purpose of the present study is to ascertain in what ways we in the United States may develop industrial education so that it may be of the greatest service to industry and to industrial workers, as well as to the whole people. The economic viewpoint and economic aspects have dominated the pedagogical, and the practical outcome has at all times been kept to the fore. Industrial education for the masses, for the rank and file of the workers, has been the chief concern. I have not concerned myself with agricultural nor with commercial education, however important these fields may be. Industrial education for girls and women has been taken up but slightly.

In the United States we lack large practical experience with industrial education for the mass of workers. Of all countries, Germany has had probably the largest and most fruitful experience with such education and has most to teach us. To learn at first hand from German experiences, I spent the summer of 1911 investigating industrial education in Germany. The cities visited were selected with a view to their importance industrially and include a number of the chief industrial centers in various lines of manufacture. The following cities were visited: The city State of Hamburg; Leipzig, Dresden, Chemnitz, and Plauen in Saxony; Munich in Bavaria; Mannheim in Baden; and Berlin, Magdeburg, Frankfurt on Main, Coblenz, Cologne, Dusseldorf, Elberfeld, Barmen, Dortmund, Essen, Duisburg, Crefeld, Munchen-Gladbach, Rheydt, and Aachen, in Prussia. Numerous industrial schools of all grades were visited, a large proportion of which were in operation. Inquiries were made of school directors and teachers, and members of school boards, as to the organization, methods, and results of the schools. The relations of the schools to and their results on industry, and the attitude of industrial employers to them, were especially investigated. In almost every city the chamber of industry was visited and inquiries made of these bodies, which are the best fitted of all to represent the opinions of the masters. In addition, a considerable number of school reports and other printed data were collected, of which one could learn only when on the ground.

It may be questioned whether German experience is likely to be largely useful to us in the United States, on account of our differences, economic, political, and temperamental. In Part II I shall note some of the economic differences. The psychological and political differences are well known. Suffice it for the present to say that I believe these constitute no essential bar to our adoption of

such features of German industrial training as I shall recommend. It is to be understood, however, that details may and probably must be modified; at times this modification may approach the essentials. It is as yet too early to say what these modifications will be.

Two terms used require special mention. The German term "Fortbildungsschule" has usually been translated "continuation school." This translation does not give the accurate meaning in most cases where the term is used. Following Dr. A. A. Snowden, in his book, *The Industrial Improvement Schools of Wurttemberg*, published by Teachers College, Columbia University, in 1907, I have rendered the term "improvement school." In case of a few schools that are merely continuation schools, merely continuing the subjects of the common school, the same term has been rendered "continuation school." It is believed that this distinction in terms will clarify a real distinction in meaning, and that the scope and aim of almost all German Fortbildungsschulen are much better represented by the term "improvement schools."

The term "trade school" when applied to the United States is used, agreeably to current usage, to mean a school which teaches the operations as well as the science of a trade or trades. The same term when applied to Germany is used in a different sense, agreeably to German usage as to terms and practice as to schools. A "Fachschule" in Germany is a "specialty school" or "trade school," and such a school may teach the practice of a trade or trades, or may and often does confine itself strictly to technical (theoretical) training.

My gratitude is due to Prof. Henry R. Seager, of Columbia University, for his advice and criticism. A number of others, loyal friends of industrial education, kindly gave me their counsel. I acknowledge especially the aid of Prof. Charles R. Richards, director of Cooper Union, New York City, who suggested many of the topics which I later investigated; Dr. A. A. Snowden, of the New Jersey Commission of Industrial Education; Prof. Paul Hanus, of Harvard University, chairman of the Massachusetts Commission on Industrial Education; Prof. John Graham Brooks; Prof. M. E. Sadler, of the University of Manchester; and Mr. Charles H. Morse, of the Massachusetts Commission on Industrial Education. I can not here acknowledge by name the numerous German schoolmen, chamber of industry officials, and others, who received me very courteously and with detailed care aided me in my inquiry. To them, as a group, I give my hearty thanks. Two men I will mention whose help I especially appreciate, Herr Schulinspektor August Kasten, of Hamburg, and Herr Direktor Kandeler, of the Second Compulsory Improvement School of Berlin. Finally, my greatest debt is due to my wife, for her criticism and her patient and careful performance of the arduous clerical labors necessary for preparing the book for publication. I offer the study for the earnest consideration of those who wish to see the industrial efficiency of our citizens increased.

HOLMES BECKWITH.

GERMAN INDUSTRIAL EDUCATION AND ITS LESSONS FOR THE UNITED STATES.

PART I. THE UNITED STATES.

CHAPTER I:

THE APPRENTICESHIP SYSTEM.

When we ask by what means are our industrial workers now trained for their work we must, to answer intelligently, examine into the present status and tendencies of the apprenticeship system. If these be such that apprenticeship meets, and promises to continue to meet sufficiently, the needs for individual training, what function have industrial schools to perform? That apprenticeship, in combination with all other activities now in the field, does not adequately meet present needs is shown by the complaint heard from many sides of the lack of skilled workmen.

The apprenticeship system took its rise in medieval handicraft work. A youth would bind himself to a master workman for a period which came in most cases to be fixed at seven years, work for him, and in turn live in his house and be taught "the art and mysteries" of his trade. The personal relations were exceedingly close, and the personal factors dominated the technical—conditions under which the system was at its best. The interest of master united with that of the apprentice in seeking thorough training for the latter, because the long apprenticeship gave the master abundant chance to gain, if he had trained his apprentice to become a skillful worker. The result was a system which, for the type of industries of the day, was probably better than any other which could be devised. The apprentice and his master were in the early days of the system on an approximate social equality in the sense that they came from the same social class. The apprentice looked forward to becoming within a few years a master himself, and this anticipation was often fulfilled. In the later middle ages the guilds, or organizations of the masters of a craft, opposed such improvement of the status of the apprentice and tried with much success to restrict mastership to the families of guild members. Other great defects of the medieval system were that the apprentice was required to spend much of his time doing household

tasks and other drudgery which advanced him little or not at all in his craft training, and the period of apprenticeship was often longer than was necessary thoroughly to learn his trade.

In the United States apprenticeship in its early stages was much like the system in medieval times. Legal indentures were the rule, in which parent or guardian, justice of the peace, or benevolent society, acting for the youth, bound him out to manufacturer, merchant, craftsman, or mariner, usually for the period terminating at his majority.¹ Both parties appeared in court and swore to carry out the provisions of the written indenture, whose terms were made to suit the special desires of the parties concerned. The policy of the State was to have all youths of artisan class taught a trade, and neglected and orphan children provided with a home. Thus any failure of the employer to carry out his contract made him liable to damages. The State further protected the apprentice by requiring from him promises of good behavior, while he also was punishable for violation of his obligations. Parents desired indentures to insure to their boys a chance to learn a trade fully, while employers desired the contract that they might be protected from loss of the services of the apprentice during his last and most valuable years of training. The indenture involved a real loss of personal liberty; and much of the law of apprentices, as that concerned with runaways, classed them, in effect, as slaves. The contract assumed an equality of master and apprentice which did not, in fact, exist. This inequality appeared in its worst form in the compulsion put on the apprentice, as in medieval times, to do odd jobs by which he learned nothing and by which his term of apprenticeship was unduly extended. The apprentice found himself after a time doing as good work as a journeyman while he must for years accept an apprentice's meager wage. A feeling of resentment against unjust treatment developed in his mind and frequently vented itself in slighted work. Expanding ideas of personal liberty in the mind of the apprentice, in which he but followed the spirit of the times, conspired with industrial changes to cause the gradual decline of the use of the indenture.²

The industrial revolution ushered in methods of production and transportation whose results on industry as well as on social life generally are clearly marked. Among others, the concentration of industry, the increase in the use of capital, organization of workers in a hierarchy of ranks, and the use of machine tools, conspired against the apprenticeship system. The technical elements have come, in most of our modern industries, to dominate the personal, at least in the sense that relations of man and man are chiefly determined by technical considerations. Now the best in the apprenticeship system depends on personal relations for its efficiency, on mutual

¹ Meloy, J. M. *Apprenticeship in American Industries*. Pt. I, ch. 1. ² *Ibid.*, ch. 1, p. 12.

understanding and adaptation of master and apprentice, teacher and taught. The master craftsman of the earlier days, who was often at the same time merchant, has given way to the entrepreneur, the administrative and financial head, and to the master craftsman who works for wage as superintendent, foreman, or skilled worker. The former, our modern entrepreneur, no longer works with and teaches his apprentices; he delegates those functions to subordinates; takes, as a rule, less personal interest in the welfare of his apprentices, and concerns himself chiefly with other, and to him apparently, more pressing matters. Moreover, the necessities for competing for a wide, and in many cases a world market, and thus increasing output and lowering cost by every possible device, have left little time for superintendent, foreman, or journeyman to instruct apprentices. It is not to the interest of any subordinate to instruct the apprentice unless the entrepreneur requires it, and moreover pays for it as fully as for regular work. Consequently, in the great majority of shops, the apprentice is compelled more and more to shift for himself and "pick up" his trade as best he may, which is generally not very well. Pieceworking journeymen would, it is said, not even deign to shut a door unless their comfort required it; still less would they show an apprentice how to do anything. Even a journeyman paid by time is likely to find, in the long run, that instruction given to apprentices is at his own cost and means just so much less bread and butter in the mouths of his family. An example of this condition is given by the amusement with which a printer speculates as to the result to a journeyman in a big city office who should have the temerity to enter on his time card, "Half an hour spent showing Johnny the why and how of the Smith job."

Why, then, does not the astute entrepreneur direct his subordinates specifically to instruct his apprentices and make it worth their while to do so? The answer is that he does so at his own peril, and at the cost of an immediate money loss. If he be farsighted enough, and moreover can afford the immediate expense, he may shoulder the cost for the sake of having an assured supply of skilled labor for the future. But unfortunately farsightedness is not fully developed even in entrepreneurs. Further, all entrepreneurs now recognize that they secure their labor supply from a general market, whence, if they are able to offer sufficient inducement, they may obtain journeymen trained by others; while on the other hand, if they go to the expense of training apprentices it may be merely to see them later enter the employ of other, and possibly rival firms. Here we see one of the results of competition, which, when severe, generally leads competitors, especially smaller and weaker ones, to follow their immediate advantage with little regard to the future. So it comes about that modern entrepreneurs, in the main, do not feel

the necessity of thorough training apprentices and thus lack a sense of responsibility in the matter. The result is that each employer keeps up as well as he can, very many of them on the basis of skill taught by others. Apprentices learning their trades in the country go to the great cities as journeymen. So desired are city jobs that many contractors can get all the journeymen they need, and do not have to take any apprentices at all. This country is also dependent on the continuous supply of skilled workers who come here from Europe; without these, in fact, the situation would be more pressing than it is. The dearth of apprentices is met temporarily in many of the building and other trades by the employment of "helpers," in the building trades, men who seldom rise, while in some other trades, as the machinist, they usually are younger, and in time become journeymen.

The apprenticeship system has thus been declining for many years. By the sixties the old indentures had largely passed away, so much so that they were no longer the rule but the exception.¹ American industry was in a transition stage of adoption of division of labor and of machinery, and along with these changes the old system of apprenticeship was fast passing away. However, apprenticeship is not by any means dead yet, and of late years has seen a revival in improved form, adapted to the conditions and needs of modern industry. In the recent emphasis on industrial education the vitality of the improved apprenticeship system has been somewhat overlooked. Of its methods I shall speak later; suffice it for the present to point out some scanty yet significant indications of its strength. The Twenty-seventh Annual Report of the Massachusetts Bureau of Statistics of Labor for 1906 shows that out of 58 employers engaged in different industries 31 had a system of apprenticeship and 27 had no such system, while of 104 officers of trade unions 55 represented trades where apprenticeship was, and 44 where it was not, in force.² President Charles S. Howe, of the Case School of Applied Science, Cleveland, Ohio, sent a letter in 1907 to 400 manufacturers in Ohio, including nearly all the large firms.³ He received replies from 124. Of these, 56 had an apprenticeship system, while 68 had none. Most of those training apprentices, however, gave them but the minimum training necessary that they might do their work fairly well. These figures should not be taken as indicative of the proportion of firms throughout the country which train apprentices. The average would probably be considerably lower, for the firms replying average among the larger and better and are in the more fully industrialized States. Messrs. Cross and Russell, of the New York Central Railroad, have discovered that "55 railroads have 7,053 apprentices in 368 shop

¹Wright, C. D. The apprenticeship system in its relation to industrial education, 1902, p. 15.
²Mass. Bureau of Statistics of Labor, An. Rep., 1906. Pt. 1, p. 2.

³Wright, op. cit., p. 15.

plants, while 67 plants answering have no apprentices."¹ The National Machine Tool Builders' Association found that a large percentage of the firms employing apprentices were in New England, the Middle Atlantic, and the Central Western States; and, further, that the majority of them entered into formal contracts properly to instruct the apprentices during a stated period of indenture.² According to the Vocation Bureau of Boston:

From the latest statistics available 43 States have laws relating to the employment of apprentices. Thirty-eight States provide that, in addition to the trade, the apprentice shall be taught the common English branches of education in some public or other school or through such means as the employer may provide.³

Most of these laws, however, are dead letters. As Prof. McCarthy writes: "The Wisconsin apprentice law was drafted in 1849 and is useless paper to-day."⁴

Notwithstanding this persistence of the apprenticeship system, the industries of the country are suffering from a great dearth of skilled labor. There can be little doubt as to the widespread nature of this dearth, whatever be regarded as its cause or causes. The nature of the lack is indicated in part by the summarized results of an inquiry conducted by the New Jersey Commission on Industrial Education, to which over 2,000 manufacturing, building, and other industrial firms throughout the State, employing 250,000 workers, replied. Workers in the building trades most urgently needed industrial education:

Comparatively few can read or understand a drawing, and as for expressing their ideas on paper by means of sketches it is generally out of the question. In the important machine industries a knowledge of workshop mathematics or applied mechanics, ability to follow working drawings, and to make a suitable sketch, as well as familiarity with the practices of the trade, are matters in which many are found wanting.⁵

A further lack, caused by specialization, is discussed below.

Dr. Motley, in his monograph on Apprenticeship in American Trade-Unions, shows that apprenticeship has been successively regulated in the history of industries in the United States first by statute law or indenture, later by custom, then by trade-unions, and lastly by trade agreements between employer and employee, determined by a joint board. None of these methods ever held the field to the exclusion of others, and in their evolution they overlap each other. Nevertheless, the general order of dominance of the several methods is as given. As our industries developed into the modern form the indenture fell into

¹ Wright, p. 43.

² Ibid., p. 13.

³ Bulletin No. 1. The Machinist. Vocations for Boston Boys. Issued by the Vocation Bureau of Boston. P. 10.

⁴ Report of the (Wisconsin) Commission upon the Plans for the Extension of Industrial and Agricultural Training. Jan. 10, 1911, p. 81.

⁵ Rep. of N. J. Comm. on Indus. Educ., 1909, pp. 4, 6.

disuse, individual bargaining came into vogue, the power of the employer increased, and trade customs were openly disregarded whenever it was to his interest. Thus it was that trade-union regulation of apprenticeship was for some time concerned chiefly to uphold old customs of the trade. Later the unions attempted to determine the length of the term of apprenticeship. Finally, beginning in 1839, with a regulation by the Typographical Society of New Orleans, unions which had suffered a lowering of the average skill of their members by the widespread practice of runaway apprentices working as journeymen, and were thus in danger of a lowered wage, tried to limit the number of apprentices to some proportion of the number of journeymen. This proportion, though ostensibly such as would meet the needs of the industry, was generally determined by rough guesswork. The unions found themselves too weak effectively to enforce these regulations without the formation of national and international unions. Some unions have been strong enough to enforce their regulations on apprenticeship, but with very many this remains merely the ideal toward which the unionists strive. Even where national unions impose exact apprenticeship rules, locals hesitate to strike to enforce them, and so it comes about in general that only where there is a strong local union are such regulations enforced. Moreover, the assumption by the unions of the sole right to regulate apprenticeship matters has aroused strong opposition among employers, resulting in an intense struggle from which there has now emerged the present dominant system of regulation by joint agreement between representatives of employers and employed, often through associations covering a whole locality or local industry.¹

According to Motley:

Of the 120 national and international trade-unions, with a total of 1,876,200 members, affiliated in 1904 with the American Federation of Labor, 50 unions, with a membership of 766,417, do not attempt to maintain apprenticeship systems.²

These 50 unions include 35 unions of unskilled workers who are able to pick up a knowledge of their work in a short time; 11 unions, 7 of which are in railroad work, whose trades are recruited by promotion from associated positions, as engineers from firemen; 7 unions in whose trades machine work and minute division of labor have made apprenticeship impossible; and 2 unions representing properly professions rather than trades.

The remaining national unions, that is, about 70 of the 120 affiliated in 1904 with the American Federation of Labor, with a membership of 900,000, together with some half-dozen unaffiliated national unions, attempt more or less successfully to enforce apprenticeship regulations.

"Of these 70 unions," says Motley, "only about 19 actually succeed in enforcing apprenticeship as a prerequisite to membership."³ In

¹ Motley, Pt. I, chs. 1-4.

² Ibid., p. 52.

³ Ibid., pp. 52-53.

fact, neither employer nor union is able to control the apprentice situation satisfactorily, even in those points where they are in agreement. Apprentices, after obtaining a smattering of a trade or becoming half trained, frequently run away and take up work elsewhere as journeymen, a practice exceedingly hard to stop.

Minor motives of unionists in the regulation of apprenticeship are the desire to uphold the standard of workmanship because of pride in their trade and their skill and the need of a common measure of ability (or "standardized" ability) for the purpose of collective bargaining.¹ Unionists fear to attempt to secure a high wage rate, for some of their number, being poorer workmen, may be unable to reach it, and may thus injure the others by their competition. An approximate equality of ability, such as could best be secured by a uniform minimum of apprenticeship training, would greatly improve the conditions of collective bargaining as compared with the present basis of some thoroughly trained workers and some half trained.

An investigation of the Minnesota Bureau of Labor into strike and other statistics indicates that—

the employers of the United States practically control the regulations of the training of new workmen in the greater number of American mechanical and manufacturing industries, subject, however, to State laws regulating child labor.²

The major responsibility for the conditions thus rests with the employers. Where employers have not attempted to regulate these matters, unions have often assumed the responsibilities and with them the powers of regulation.

In conclusion, the net result of our inquiry into the influence of trade unions on the scarcity of skilled workmen seems to be that to no great extent is that scarcity due to union action. We must look elsewhere for the chief causes of this lack.

Of some of these, incident to modern industrial changes, I have already spoken. One remains, and that perhaps the most important of all. That is specialization, or the division of labor. Though affecting different industries very unequally, the aggregate effect on apprenticeship and on both the demand for and supply of skilled labor has been very great. Roughly speaking, this effect has been greatest on the metal, on some of the leather and wood industries, on textiles, and on garment making. The subdivision of processes in some of these industries has been very great; for example, the making of a modern shoe involves about a hundred processes. In the past, all craftsmen proper were compelled to be skilled; now the tendency is toward a differentiation into many industries, the result of which is a demand for a large number of workmen of moderate skill, or in some cases unskilled, and a lesser number of highly skilled workers. The mere fact that a worker is running a machine does

¹ Motley, p. 72.

² Minnesota report, sec. 22, p. 272.

not mean that less skill is required of him than of the old craftsmen; it may be that he must be more skillful. There are machines, however, run by mere machine tenders who need have little intelligence or training. Such machines, requiring little or nothing but the indefinite repetition of a few simple motions, constitute in the demands from and consequent effects on the worker one of the greatest of our present-day problems. Another type of specialization does not involve mere machine tending, but rather the subdivision of what was once one trade into a number of branches, in which the tendency is for the worker to learn and practice but one. Thus the most advanced practice in carpentry involves the specialization of one man in door-hanging, another in tacking molding, another in laying floors, and so on.

The speed at which modern industries are run, in the ceaseless effort to increase output and lessen cost, militates strongly against the possibility of an apprentice learning more than a branch of a trade. The foreman or superintendent is strongly led to keep the apprentice at that work for which he shows an aptitude. To change him from machine to machine or branch to branch of the trade involves for the time a decreased output; and modern competition, as a rule, leaves little thought for remote results, especially when whatever benefit is obtained in the future may be reaped by another. Such is the condition when the apprentice is earnestly seeking to learn the whole trade; but many trades are unable to secure enough good apprentices because of the long years of service at low pay. The boys or their parents are unwilling to make the sacrifice and far too often accept better immediate wage in industries of lower grade, with less promise for the future, instead of learning a good trade.

This attitude, with technical factors in some industries, has resulted in bringing about what is called the special apprenticeship system. Under this system the apprentice is indentured to one department only of a trade, for a period varying from one to two years, as against the average for regular apprenticeships of about four years. Such a system has been adopted by the National Association of Machine Tool Builders who declare that they are confronted by a condition and not a theory. When boys are transferred from one department to another, there is a loss of immediate efficiency, on account of which high enough wages can not be paid to attract a sufficient number of boys. The only way to obtain apprentices enough was to pay higher wages, and this required giving the boys work that paid their employers from the start. Boys were accordingly taken for a trial period of 240 hours and then indentured to one of the 11 departments: Turning, vertical boring mill, horizontal

Wright, pp. 77-78.

boring mill, planing, milling, drilling, grinding, erecting, turret, vise, and scraping. The narrow range of attention allowed rapid advance in proficiency and a correspondingly high wage. At the start 12 cents an hour was paid, increasing successively to 14, 16, and 18 cents, and as high as 20 cents after a year and a half. A general apprenticeship frequently pays less near the end of a four years term than this special apprenticeship after a year's work. For comparison, the general apprenticeship under this association is three years, and the wages paid only 8, 10, and 13 cents an hour for the first, second, and third years, respectively.

So strong are the tendencies toward this system, so manifest its advantages, that we are bound to see its great development. Yet its chief advantages are immediate, and it is subject to disadvantages whose force does not at once appear, but are none the less vital. From the standpoint of the industry, or of the employer, an increase in the extent of this system means a labor force less adaptable and mobile. We must recognize that there is a fundamental difference between this type of specialization and that of physicians, lawyers, and scientists. The latter specialize on the foundation of a broad general training; the specialized apprentice knows nothing but his speciality. The weaknesses of the system affect the apprentice most. An apprentice, if all goes well, may after the completion of one special apprenticeship take up another; but few are willing to do this; meaning, as the change would, a decrease in wage for the time being from 18 to 12 cents an hour. He may earn as much pay and have as regular work as if he knew the whole trade; despite the fact that he will sooner exhaust the possibilities of interest in his work. But he has not the resource possessed by the man who is trained in the whole trade; his alternatives for employment are fewer, and a relatively slight change in industry or a dispute with his employer may leave him unable to obtain work. The displacement of workers trained in the whole trade by those acquainted with only a small part of it can scarcely fail to increase the dependence of workers on employers and so strike a blow at our democracy. Yet so great are the immediate advantages of this system to both employer and apprentice that we are likely to meet it in the future far more than we should like. Such specialization should be distinguished clearly from those forms where either the specialization is made on the basis of a previous broad training, as is usual in building carpentry; or, where the portion of a trade studied is so large and complex as to tax the abilities of the apprentice and give him considerable resource and alternative in later life, and is therefore tantamount in its extent to a whole trade of earlier years. Such subdivision of trades we must recognize as in the main necessary and desirable, in view of the great technical advances

of recent years, which add greatly to their complexity, and are probably free from the chief disadvantages urged above against narrow and exclusive specialization. Finally, extreme specialization in some industries, as in boot and shoe or watch manufacture, has made any semblance of an apprenticeship system high impossible.

In some trades the helper system is a substitute, in part at least, for apprenticeship.¹ The helper is an adult, and neither performs the same operations as the journeyman with whom he works nor is usually given any instruction in the latter's work. He "picks up" his trade if he can by watching the journeyman, and, occasionally, performs the operations of the trade proper. Helpers are largely present in the building and other trades where a man's strength is necessary. No definite term as a helper is usually necessary before entering the trade proper. The helper system is more important than apprenticeship in trades where experience is the chief factor in proficiency, as in printing and in the work of locomotive engineers. The fireman is the engineer's helper, as the brakeman is of the conductor, and each of these sets of helpers recruits the higher positions after passing through examinations.

Three different groups of helpers may be roughly distinguished, according to Messrs. Weyl and Sakolski: "(1) Ordinary laborers; (2) 'improvers,' 'holders on,' or 'junior workmen'; and (3) handy men."² The ordinary laborers, as hod carriers, seldom become journeymen. The second group, "improvers" or "junior workmen," do work similar to that of the journeymen who supervise them. Their wages are 25 to 50 per cent lower than those of journeymen; hence they tend to do the latter's work whenever possible, unless prevented. "Handy men" do not work under journeymen, but do odd jobs and less skilled operations. They also come into competition and conflict with the journeymen.

The helper system tends to recruit the ranks of journeymen more rapidly than does apprenticeship, and so has given rise to many struggles between journeymen and helpers or employers.

¹ Weyl, Walter E., and Sakolski, A. M. Conditions of entrance to the Principal Trades. Bulletin of the Bureau of Labor, No. 67, Nov., 1908, pp. 768-777.

² Ibid., p. 770.

CHAPTER II.

OPINIONS OF EMPLOYERS AND EMPLOYED.

What is the attitude of the employer toward the present situation, and what that of the employees? In particular, how do they regard trade and technical schools as a means to help solve the practical problems confronting them? These are questions whose answers are of vital importance, for the cooperation of employers and employees alike is needed in any attempts at betterment.

The attitude of employers and employees toward restriction of apprenticeship is well shown in an investigation conducted by Prof. Charles R. Richards, and published as Part I of the Report of the Bureau of Labor Statistics of New York State for 1908 on Industrial Training and in Part I of the similar Massachusetts report for 1906. Returns from New York show the following: Two hundred and one firms employed the full number of apprentices allowed by union rules, while only 128 do not do so. Only 172 firms are prevented by trade-union restrictions from employing as many apprentices as they otherwise would, while 263 are not so prevented. Out of 309 firms stating that the apprenticeship system does not meet the need for skilled employees in their industry, 111 offer the trade-union restrictions as the cause of this lack, a larger number than favor any other single cause.

The only firms that state both that trade-union restrictions prevent them from having as many apprentices as they would otherwise have, and that they are employing the maximum number of apprentices allowed by union rules are glass blowing, book, job, and newspaper printing, bricklaying, electrical contracting, steam fitting, and tile setting.¹ Turning to the Massachusetts report we find questions and answers as follows: Is the apprenticeship system (if any) under the immediate control of the trade-unions? Twenty-one employers answer yes; 37, no; 46 union officers answer yes; 56, no. Do you consider it a good plan to restrict the number of apprentices? The employers vote no by 41 to 5; the unionists, yes by 71 to 18. If the employer were permitted to employ as many apprentices as he wished, would he dispense with the services of the journeymen now employed; or, in other words, would he employ apprentices to the exclusion of journeymen? The employers vote 39 to 4 in the negative; the unionists declare assent by a vote of 67 to 20.² These figures speak

¹ New York Bur. Labor Statistics, 26th An. Rep., 1908, Pt. I, pp. 29, 32, 34, 35-50.

² Mass. Bur. Statistics of Labor Rep., 1906, Pt. I, pp. 6-11.

for themselves. They show a natural disagreement of opinion between the parties concerned as to the results of trade-union restriction of apprentices. They also show, I think, that according to the employers' own opinion, the restrictions are less harmful than is usually thought by employees. So much for opinions on restrictions of apprentices. What attitudes do employers and employees take on the further questions of trade training?

The New York report mentioned above gives some statistics of the views of employers: Five hundred and forty-nine firms stated that they had difficulty in obtaining or in training skilled employees; 569 firms that they had no difficulty. The number of firms reporting that all of their skilled employees were trained in their establishment was 74; that the majority were so trained, 435; that a few were there trained, 447; and that they had trained none of their skilled employees, 210.¹ Where difficulty in obtaining or training skilled workers was reported, the minority of such workers were usually trained in the works; the firms that reported no such difficulty had trained the majority of their skilled workers.

As typical of the views of employers may be taken the report of the committee on apprenticeship of the National Association of Builders, who say that "apprentices must be taught and mechanics made in the future by entirely different methods from those in vogue" under the old apprenticeship system.² The method proposed is by preparatory private trade schools, affiliated with but not run by an association of builders, and involving a shortening of the ensuing apprenticeship by at least a year. James W. Van Cleave, ex-president of the National Association of Manufacturers, advocates a manual-training department in every public primary school and in free industrial high schools.³ The committee on industrial education of the American Foundrymen's Association advocates industrial continuation schools which should become differentiated into trade schools as the pupils reach the age of 15.⁴ These views of employers, favorable to trade and technical education, may be taken as representative. Carroll D. Wright declares:

All employers realize the importance of this kind of education [that is, public industrial education]. Those who can afford it prefer their own system. * * * But it is very rare to find an employer opposed to some scheme of industrial education.⁵

Wright further states:

Careful investigation shows that the demand for trade schools comes from employers who have no systematic, definite method of training their apprentices. These men are of the opinion that a public trade school would furnish them with a supply of

¹ N. Y. Rep., p. 15.

² Minn. Rep., pp. 435, 436.

³ Rep. of special committee on indus. educ., Amer. Fed. of Labor, 1910.

⁴ Wright, p. 70.

skilled mechanics. Generally they have no more realization of the probable results of a public trade school, as far as producing skilled mechanics is concerned, than they have of the possibilities of a first-class apprenticeship system in their own works.¹

These remarks, it should be noted, apply only to trade and not to the more general type of industrial schools. Those firms which have a first-class apprenticeship system themselves generally feel that no public trade school could meet their needs, but they are not opposed to such schools in general and desire them for the industry at large.²

The New York report mentioned above presents the results of questions asked of 1,182 employers and of the officers of 2,451 unions in the chief industries of the State, showing the attitude toward different types of industrial and trade schools.³ The question was asked: "Do you favor a public industrial or preparatory trade school which should endeavor to reach boys and girls between 14 and 16 who now leave the common school in very large numbers before graduation? Such a school would not teach a trade, but would give a wide acquaintance with the materials and fundamental processes, together with drawing and shop mathematics, with the object of giving a better preparation for entering industries at 16 and better opportunities for subsequent advancement." To this both employers and unionists replied in the affirmative; the employers by a vote of 840 to 248, the unionists by one of 1,500 to 349. Among the manufacturers the different industrial groups favored this type of school in the following order: "Machine and metal manufacturers, building trades, wood manufacturers, printing and paper manufacturers, glass manufacturers, textile industries, clothing trades, leather manufacturers, confectioners." The skilled trades are the most strongly in favor of such schools, and the only group opposed is the cigar makers. The question, put somewhat differently to the two groups, was asked whether trade schools for boys and girls were favored, which should give one or two years of practical training together with drawing and mathematics, provided (this part of the question sent to the unionists only) graduates should serve two years as apprentices or improvers. Both groups answered affirmatively, but by a less overwhelming vote than that for the more general type of industrial schools; the employers voted 744 to 341, the unionists by 1,232 to 567. The order in which the different groups of employers favored these schools is as follows: "Machine and metal manufacturing, building trades, leather manufacturing (chiefly boots and shoes), wood manufacturing, printing trades, textile industries, clothing industries, manufacture of cigars." Employers were further asked whether they thought the proposed trade schools could be "advantageously administered by the State or community at public expense."

¹ Wright, p. 78.

² Ibid., p. 69.

³ N. Y. Rep., pp. 38-50.

and operated on a noncommercial product." To this they replied in the affirmative by a vote of 582 to 348. Their answer to the question: Would such schools, if conducted by industrial establishments and operating on a commercial product, be practical? was negative by 529 to 405 votes. Thus every group of employers, with the exceptions of those manufacturing leather, cigars, and confectionery, preferred State or community to private management. Finally, to the query, would practical evening or half-time schools be of value in helping unskilled workers or those of low-grade skill to advanced positions requiring high-grade skill, the employers reply affirmatively by a vote of 738 to 805. The relative faith of the employers in the various classes of schools is indicated by the following table from the New York report:¹

Industries.	General industrial schools.	Trade schools.	Evening schools.
Glass.....	1	3	2
Metals.....	1	3	2
Wood.....	1	3	2
Leather.....	2	1	3
Printing.....	1	9	3
Textiles.....	1	2	3
Clothing.....	1	2	3
Confectionery.....	1	3	2
Cigars.....	3	1	2
Building.....	1	3	2

A considerable number of employers thought evening trade and technical schools desirable. It was the general industrial school which won first place in the opinions of almost all; and it is noticeable that trade schools were placed last by all the industries commonly called highly skilled, except the printing trades. The net result, from both employers and unionists, is that general industrial schools are overwhelmingly desired; day trade and evening trade and technical schools are also desired, but less vigorously.

The National Association of Manufacturers has, since 1904, recognized the importance of the question of industrial education by the appointment of a committee which has reported annually since 1905. This committee, stirred by a realization of the paucity of skilled mechanics, has persistently advocated industrial schools. Moreover, it has claimed that trade schools alone can turn out finished workmen, without the need for any apprenticeship. In 1910, the committee went into the question of the sort of schools to be desired, and reported as follows:

Great progress has been made throughout the country in approaching general agreement on the following points:

1. That the interests of manufacturing industry require a new education for boys who are to work with tools and machines.

¹N. Y. Report, p. 22.

2. That this industrial education must consist of skill and schooling and that these two parts are of equal importance; that they must be organically combined and that each will coordinate and supplement the other.
3. That real skill and suitable schooling can not usually be given in the ordinary public school by the average schoolmaster.
4. That the average manufacturing shop or factory is not likely to organize private trade-school departments in their works that will give the best results in both skill and schooling.
5. That real trade schools are feasible and practicable where a higher practical, efficient shop skill can be secured than has ever been known under the ordinary apprenticeship, and that this is possible even when one-half of the apprentice's time is devoted to schooling adapted to the life of the pupil.
6. That such half-time trade schools can be so organized and conducted that a superior high skill and a broader shop experience can be secured than the average manufacturing shop can give in its specialized modern factory, because there the object is to make money and not to make skilled, intelligent, trained workmen.
7. That such a real trade school must have well-equipped, productive shops, where pupils are taught the best methods of rapid, high-grade production by skilled working mechanics.
8. That such trade schools need not produce anything but useful, high-grade products, with a very small percentage of spoiled work or damage to tools and equipment—a smaller percentage of loss than occurs in the average shop.
9. That where such a trade school can be established, with modern buildings and equipment and a moderate working capital, well managed, it will not only be an efficient educational institution, covering the high-school period, but it will be productive and largely self-supporting.
10. That such a real trade school can be maintained with a course corresponding to the high-school course, persistently aiming to turn out working mechanics with superior mechanical skill and wide shop experience, plus good mental training. In this way a class of skilled American mechanics will be produced, meriting higher wages than the average mechanic, and the greatest good will come to wholesome organized labor and to individuals through individual merit.

The committee further reports in favor of evening schools (general, industrial, and trade), half-day schooling each week for apprentices and other workers where the employer is willing to pay the regular wages while they attend school, and part-time schools. These schools are primarily to meet the needs of those now in industry. Similar schools are favored for girls and women, in which, besides industrial studies, home economics shall be given a large place. These several proposals constitute a highly important body of suggestions, which, if they are at all adequately backed up by the membership of the association, represent a great advance in definiteness of attitude toward industrial education. Whether or not we can wholly accept the program presented, I shall discuss in the conclusion.

In 1911 the committee on industrial education, having changed its personnel in part and studied the question further, reported again, this time very differently from their 1910 report. They no longer champion trade schools, but, as a consequence of German and other

¹ Proc. 11th an. convn. Nat. Assn. Manufacturers, New York, May, 1912, pp. 246, 247.

European example, focus their attention and chief approval on industrial improvement schools. The National Association of Manufacturers, following their report, passed the following resolutions:

Resolved, That this association earnestly devote itself, with reasonable outlay of funds, to the promotion of industrial education, to the end that such education may be made available, as soon as possible, to every child who needs it.

Resolved, That we favor the establishment in every community of continuation schools, wherein the children of 14 to 18 years of age now in the industries shall be instructed in the science and art of their respective industries and in citizenship.¹

Unionists have been much criticized for their opposition to trade and industrial schools. They did not for a long time understand the situation clearly, and many do not yet do so. Generally speaking, however, the attitude of union men has steadily become more and more favorable, until the approval indicated in the New York report has become a fact. The main stumbling block which prevented union approval of such schools was apparently the impression that their graduates were sometimes used as strike breakers, and that the atmosphere of the schools was often either hostile to unionism or not distinctly favorable. The charge that trade schools were used to displace skilled unionists by "half-baked" school boys, temporarily or permanently, caused unionists in many instances to regard them as "scab hatcheries." But if the graduates of trade schools are able to displace skilled laborers, does not this indicate that they are able to do the work required; and if so, do they not deserve the places? On the other hand, if they are distinctly inferior as workmen, why should the skilled workers fear them, and how can they, in fact, displace their superiors? I believe that no one answer to these questions is sufficient. Some of the work, doubtless, now done by superior workmen, masters of their trades, can be done substantially as well and at lower cost by inferior half-trained workmen who would be unable to perform many of the more difficult operations of the same trade.

The skilled workmen fear partial displacement by some such half-trained workers, the chief advantage of whom to the employer is that they are cheap. Temporarily, also an employer may secure poor workmen to tide him over for a few weeks as best they may, in order to win a strike. Further, the presence on the market of a large number of poorly trained or of half-trained workers, does, I think, tend, through the difficulty of dealing with individuals strictly on their several merits, toward a lowering of the standards and thus of the wages of the whole group of workers. But in the main I believe that those who possess developed skill need not greatly fear those who do not possess it, and that unionists are in no serious danger from the

¹ Rep. of committee on indus. educ., 18th an. conven., New York, May, 1911, Nat. Assoc. of Manufacturers.

graduates of trade schools, except where they are now maintaining a monopoly of skill.

But unionists may retort that trade schools have in the past flooded some trades and have supplied strike breakers to employers by virtue of the superior advantages furnished to enter those trades as compared with others. Private money-making schools are especially condemned on this score, and judgment is often reserved concerning even philanthropic trade schools till these have shown themselves at least not antagonistic to trade union principles and practice. Admitting the alleged facts, what is the remedy? It is better facilities for learning all trades, as far as obtaining these is feasible. Then the number and capacity of the intrants into the several trades will tend to adjust themselves toward that condition where men of equal capacity and opportunities will be in trades of equal attractiveness. Increase of freedom in industrial and trade education will tend toward securing the best men for the trades needing them and able to pay them most, and thus to offer them most attractions toward securing less able men for less important positions, and so on to the lowest rung of the ladder. If unionists are trying to maintain wages and conditions of work, by restriction of intrants into their trades beyond what is necessary to uphold the standards of skill and prevent such excessive influx as would lower the wage below what equal ability secures elsewhere, they are doing injustice to those who would otherwise enter the trades concerned.

It has been noted above that unionists favor general industrial much more than trade schools. Their attitude, moreover, varies greatly with the trade concerned. They favor evening schools, for these seek principally to help those already in the trades and involve no danger of unduly increasing the supply of workers. Correspondence schools for like reason meet their approval. Apprentice or factory schools they generally approve, because of their practicability and because there is no undue increase in the number of workers. They are as yet opposed to cooperative schools, for reasons explained in the next chapter.

The unionists probably appreciate the disadvantage of a too narrow specialization more than employers do, for the resulting burden falls chiefly on them. Thus the committee on industrial education of the American Federation of Labor, in a report which gives unanimous support to industrial education, states the principle that "public industrial schools or schools for trade training should never become so narrow in their scope as to prevent an all-round shop training," and they further refer to "the injustice of narrow and prescribed training in selected trades by both private and public instruction." To conclude this presentation of the attitude of organized labor, I

¹ Ch. 2, pp. 22, 24.

² Amer. Fed. of Labor Rep., 1910, p. 24.

³ Ibid., II.

cise the main provisions of the Page-Wilson bill, now before the Federal Congress. This bill is based on the Davis bill,¹ called in the American Federation of Labor Report: "Labor's Bill for Congressional Enactment." The bill can not, however, be said to represent exclusively any class. In the form reached July 24, 1912, it provides for annual appropriations by the National Government to the States, of a total, when in full force, of \$14,780,000. Of this sum three million dollars is to maintain instruction in agriculture, industries, and home economics in departments of secondary schools. Three millions is to maintain instruction in the industries and home economics in separate secondary schools for the purpose. Three millions is to maintain instruction in agriculture and home economics in district agricultural high schools. Six hundred and forty thousand dollars is to maintain training for teachers of these vocational subjects in colleges, and one million dollars for similar training in normal schools. All the above grants are conditioned on the providing of a total of State and local appropriations equal to twice that of the Nation, in addition to any any costs of land or buildings. One million dollars is appropriated annually for branch agricultural experiment stations, and sums rising to a maximum of \$3,140,000, annually for extension departments of State universities; these grants being conditional on the spending of an equal amount in total by State and locality, for the same purpose, besides providing permanent plant. All these grants are conditional on supervision by the Federal Government, in cooperation with State boards for vocational education, and the maintenance of certain standards.

With this evidence of the favorable attitude of the highest body of organized labor in this country, let us turn to another phase of the question. I have so far been concerned with the need for industrial education, which is shown in the condition of industry in the country to-day, and which is reflected in the views of those most intimately acquainted with these conditions. I shall now take up the question of how far those needs have been met in the United States. What industrial schools have we, and what are they accomplishing for industry?

¹ Amer. Fed. of Labor Rep., 1910, pp. 20-22.

CHAPTER III.

INDUSTRIAL SCHOOLS IN THE UNITED STATES.

In the early days of our country, school and shop and farm were widely separated in function. Trades were so well taught by apprenticeship or by parents to their children that there was little need for the schools to dabble in industry and try to help in vocational training. These early conditions and similar ones preceding them, together with the scholastic ideals, are responsible for the rise of a tradition, especially among the schoolmen, that has been very hard to weaken—that the school should have nothing to do with industry. Its function was more general—to provide that mental equipment which is requisite in all walks of life. Thus the schools limited their efforts to the instruments of communication, and the superstructure reared on these, of history, literature, and science. As our society went through its marvelous development, and the apprenticeship system weakened, the schools maintained their traditional position, and the gap between them and industry became ever wider. Yet a variety of special types of schools arose from time to time which sought, apart from the regular public school system and its pinnacle of classical colleges, to bridge the chasm, to bring education into closer touch with life, and to minister to the needs of industry.

First among these were the privately endowed evening industrial schools, such as Cooper Union and the Mechanic's Institute of New York City, Franklin Union and Spring Garden Institute of Philadelphia, the Ohio Mechanic's Institute of Cincinnati, and the Mechanic's Institute of Richmond, Va. These schools, according to Dr. Charles R. Richards,¹ were almost all founded, or opened evening classes, during the fifties. They met with such a great demand for their services that similar public schools should have been called into the field, but the scholastic ideal was too firmly seated to make this feasible. The next development was the inauguration of institutes of technology, in the period of railroad and mining expansion following the Civil War. The Rensselaer Polytechnic Institute had, indeed, been founded in 1824, but its example was not emulated until 1865, when the Massachusetts Institute of Technology was established, followed within a few years by the Worcester Polytechnic Institute, Lehigh University,

¹ Richards, C. R.: Notes on Hist. of Indus. Edu. in U. S., in Nat. Edu. Assoc. Rep. of Committee on Place of Industries in Public Education, 1910, pp. 24-29. Compare also for facts below as to history of industrial education in the United States.

and Stevens Institute of Technology. These institutions were private, but were soon followed by similar ones of a public nature. The Morrill Land-Grant Act of 1862 has by its financial support, amounting to over \$16,000,000, aided about 60 State universities and other institutions which carry on agricultural and technological education.¹ Some of the agricultural colleges coming under this act, and situated in the South, now offer genuine trade training not leading to a degree. Another movement, which began in 1868 by the founding of Hampton Institute in Virginia, was the industrial education of the negro race, a movement carried on with signal success in a most difficult field. In 1870 industrial drawing was introduced into the schools of Massachusetts, from which the movement has spread, until now the subject is generally required in the cities and larger towns. Manual training had its first beginnings about 1870 under European influence, while manual training high schools began to be founded about 1880. This movement spread rapidly, entered the primary school after 1887, and is now very widely spread throughout the country. In 1872, the first school of design was founded in Lowell, Mass., as an aid to the textile industry. Stimulated by this example, other similar schools and several textile schools have grown.

Trade schools proper are of comparatively recent origin. The first, the New York Trade School, was founded on private endowment in 1881. During the next 20 years only two important schools which trained in the mechanical trades were founded. These were the Williamson Free School of Mechanical Trades, near Philadelphia, and the Baron de Hirsch Trade School in New York City. These schools, together with the Miller School, of Albemarle, Va., which adds trade to general training, and two schools in San Francisco are all privately endowed. Not till 1907 were public trade schools established, beginning with the taking over of the Milwaukee School of Trades by the city under State law. Since then, trade schools have been opened in a number of cities.² Within the last few years, also, general industrial or preparatory trade schools have been much discussed and have been established as parts of the public school system in Rochester, Albany, and New York, and in six other cities in New York State; in Newton, New Bedford, and other Massachusetts cities, and elsewhere. Within the past few years, also, the so-called half-time system, or cooperation between school and shop, has arisen.

Such, in outline, have been the successive stages of the rise of the agencies of industrial education, to the consideration of which I shall now turn. Uncoordinated one with another, they have grown

¹ Seventeenth An. Rep. Commissioner of Labor, 1902, pp. 19-24. (A chief source, with Richards' Notes, etc.)
² Cf. p. 34.

up spontaneously, chiefly as the result of private initiative. We have no *system* of industrial education in the United States. And despite the expenditure of a considerable amount of energy and money on those schools and phases of our schools which are industrial in aim, the result is, for the great mass of citizens, very small indeed. We pride ourselves on democracy in education, and yet our higher technical schools are far more fully developed, and far more nearly meet the country's industrial needs, than our lower schools. Indeed the lower schools are all but lacking; the schools of the country are, as related to industry, top-heavy. Our institutes of technology and engineering schools and universities, which train industrial leaders and technologists, compare favorably with the best in Europe. But so meager is the provision for the masses that Mr. A. C. Humphreys, president of Stevens Institute, states the following results of an inquiry conducted by the international committee of the Young Men's Christian Associations:¹ Of 13,000,000 young men in the United States between 21 and 35, only 5 per cent have received in the schools any direct preparation for their vocations; of every 100 graduates of our elementary schools, only 8 obtain their livelihood by means of professional and commercial pursuits while 92 support themselves by manual labor.

Of all the schools or parts of schools in the United States which have an industrial character the following will be omitted from consideration: Agricultural schools, schools for negroes or Indians, higher technical or engineering schools, and industrial art schools. The attempt will be made to discover what has been done to forward industrial education for the great masses in industry. First in order, let us examine the manual training classes and manual training high schools.

Manual training began in the United States with schools of secondary grade and percolated downward into the elementary schools.² The educators who introduced it desired, in the words of one of their leaders, Dr. H. H. Belfield—

to offer to boys what was called a more "practical" education than that offered by the ordinary high school; while avoiding a trade school, to give the boy an acquaintance with the forces and conditions of modern life, to give him the use of his hands, or, as Dr. Woodward phrased it, "to put the whole boy to school."³

Educators have quite generally regarded manual training as another mode of cultural training and as a means of formal discipline, valuable to train the observation and reasoning powers and to strengthen the will. "The manual-training high school," according to the National Education Association committee, "has never claimed to fit boys

¹ Nat. Soc. for Promo. of Indus. Educ., Proc. 3d annual meeting, Bull. No. 10, p. 28.

² Nat. Educ. Assoc. Rep., pp. 80-114.

³ Ibid., p. 83.

directly for industrial pursuits."¹ A succinct definition states that a manual-training high school is "a high school with a course in manual training in lieu of Latin and Greek."²

The records of graduates of these schools show that they do not train for the trades to an appreciable extent. Their graduates follow the most diverse lines, just as in any other high schools, as business and the professions, while a number go on to the higher technical schools and a number enter trades. According to the Massachusetts commission, out of 2,437 manual-training school students whose records were available but 52 were in mechanical trades. Further, the committee of the National Education Association declare that "with few notable exceptions, practically all of the existing industrial and technical high schools now operating in the United States as parts of the public-school system should be classed as manual-training high schools," according to the definition above, and not as technical high schools whose purpose is distinctly vocational, the training of industrial leaders of the lower grades. The general public expected from this movement more practical industrial results. These have not been forthcoming; but manual training has made for itself an enviable place in our system of general education, furnished its students a wider outlook from which to choose a vocation, and commended itself to large numbers of people. It is now probably best that the movement be continued as it is, and that the industrial function be accomplished by other schools, independent of our existing system in whole or in part, and managed primarily by men in close touch with industry.

Much more hopeful for industry is the recent inauguration of apprentice schools in shops.³ A number of larger manufacturing and railroad companies, to increase the efficiency of their employees or to train up a generation of workers, have instituted schools in which their apprentices are taught such subjects as mechanical drawing, reading of drawings, shop arithmetic, strength of materials, mechanics, electricity, testing of machines, etc. The detailed arrangements differ from shop to shop, but in general the teaching is very practical, is intimately connected with the shop work, and is carried on by the method of concrete problems. The apprentices are usually paid for their time while in the school, just as in the shops, and are held to the same standards of attendance and discipline. Special teachers in many cases instruct the boys, generally in the school, sometimes in the shop also; the course of study is often carefully laid out by the consulting engineer or by some member of the firm. In some cases, as in the General Electric Co.'s plant at Lynn, Mass., a special apprentice training room is set aside for the purpose, and here the boys work at machines isolated from the rest of the

¹ Nat. Educ. Assoc. Rep., p. 65.

² Ibid., p. 87.

³ Wright, pp. 22-23; Nat. Soc. Promot. Indus. Educ., Bull. No. 11, pp. 72-81.

factory. In some cases shifts of boys are kept alternately at the machines and in the school, thus obtaining the fullest possible utilization of the machines and of the services of the teacher. Usually only a few hours a week are spent in the school, though in some cases as much as half the time is so occupied. In the shop, the apprentices are usually advanced from machine to machine or department to department as fast as they become proficient, or at stated intervals. Sometimes they are required before leaving a machine to instruct another boy concerning it. In some few cases employees other than apprentices may also enter the apprentice classes. Prizes or other recognition of good work are often granted as useful stimuli.

Some companies conduct the schools largely to provide future foremen, designers, superintendents, and technical experts. In some cases examinations are held for those who desire to become apprentices, and also to determine proficiency on completion of the course; in others a common school education and physical fitness are required for entrance, while graduation or proficiency is attested by the personal knowledge of the teacher. The popularity of these apprenticeships is attested by the fact that in the better companies, at least, there are many candidates on the waiting list, and the companies can select the best fitted boys. Trial periods are the rule, as in most apprenticeships, and then the signing of a regular indenture. The school course usually lasts as long as the apprenticeship, and a good grade of work is required for its successful completion. The boys usually appreciate the superior advantages they receive for a thorough trade training and are often enthusiastic for their company. Some of the companies which have adopted systems of this sort are (with number of hours of schooling given a week): The Fore River Shipbuilding Co. (18 hours for 7 months); the New York Central lines (4 hours); the Santa Fe Railroad (4 hours); the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. (4 hours); the International Harvester Co., Chicago, Ill.; the Allis-Chalmers Co., of Cincinnati, Ohio; the General Electric Co., West Lynn, Mass. (7½ hours); the Lakeside Press, Chicago, Ill. (21 hours, 2 years out of 7); and the Solvay Co., Syracuse, N. Y. (alternate weeks in school and shop).¹ These companies and others which have adopted the system in some form are in the main large companies, and so far with them the system has worked well.

This suggests the query whether the system is applicable to companies of any size or only to large firms. The smallest number in any apprentice school conducted by a manufacturing company of which I have data is 28, the largest number 206, while the average is 69 apprentices. The railways show a much lower average, owing to the fact that at most division points there are but few apprentices;

¹ These data chiefly from Wright, pp. 24-25.

61 railways have 8,367 apprentices in 406 schools, or an average of not quite 21 to a school. The hiring of a special instructor for so few apprentices would be too expensive and is not strictly necessary; for these reasons the shop superintendent, chief draftsman, or other regular employee generally conducts the instruction and supervision, and in some cases the instruction covers little more than mechanical drawing. So far as the present experience with shop schools goes, it seems that instruction of comparatively few apprentices is feasible, that in most cases a small or medium-sized shop can not afford a special instructor, and that the apprentices thus lose in thoroughness of instruction. As to the smallest shops, the plan does not seem feasible for them. Even a class of 15 or 20 apprentices is not possible except in an establishment of from about 60 to 400 workers. In some industries, as in the building trades, the system is not applicable at all. The system is new, however, and may become a good solution of a part of the general problem. Railroad men are especially inclined to hold that no trade school can meet the highly special needs of their industry.

A modification of the system of apprenticeship schools in the shop¹ is found in an apprenticeship system where instruction is given outside of the shop but under the direction of the employers. The North End Union School of Printing, of Boston, is owned and conducted by an association of master printers. It offers one year of trade schooling at a cost of \$100 to the boy, to take the place of the first two years of an ordinary apprenticeship, and then apprenticeship for four years to some master printer at a guaranteed wage steadily increasing from \$9 to \$18 a week. Some other firms "encourage" boys to attend night schools, but neither require such attendance nor offer adequate incentive to them to do so. Such systems are too weak to accomplish much.² The Baldwin Locomotive Works and some other firms, however, require their apprentices to attend evening school and study mechanical drawing and other courses in line with their shopwork.³

Akin to the last-named type is the part-time system, or cooperation between school and shop.⁴ In this type the employers and a school or schools, usually public, divide the time of the apprentices according to different proportions, the bulk of the time usually being spent in the shops. The instruction given is technical, relating to shopwork, though it may include also some of a business and of a civic nature. In Beverly, Mass., the apprentices of the United Shoe Machinery Co. alternate, in two groups of 25 each, between the Beverly (public) industrial school and the shop. The boys are paid half the regular piece price for their work, and the company assumes the cost of the shop. In Fitchburg, Mass., apprentices of mechanical trades

¹ Wright, pp. 57-67.

² Ibid., pp. 56-67.

³ Nat. Soc. Promot. Indus. Educ., Bull. No. 11, pp. 111-113.

are given one full year in the high school, followed by three years of alternate weeks in the shops of manufacturers as apprentices and in school. In Cincinnati, Ohio, apprentices are taught in an improvement or continuation school of the city for 4 hours a week and 48 weeks in the year.¹ "The school teaches the three R's, civics, mechanical drawing, blueprint reading, and good citizenship. Much attention is given to shop mathematics." Beyond the scope of the present inquiry, but illustrative of the part-time system applied to engineering education, is the cooperative plan between the University of Cincinnati and the manufacturers of that city, by which engineering students who are accepted by the manufacturers are enrolled also in the university, and regularly indentured for a six-year course, in which shop and school are closely coordinated.² During college term they spend alternate weeks in school and shop, and when college is closed they work regularly in the shops. They are paid for their work in the shops at rates which total about \$2,000 for the six years. Though spending only half the time at the university that is spent by those taking the regular 4-year engineering course, the apprentice students did three-quarters of the work done by the latter, with grades 25 per cent better. This system for training industrial leaders is, so far as it has gone, a success.

To the extension of such cooperative systems between public schools and shops, trade unionism offers strenuous objection. In the report of the special committee on industrial education of the American Federation of Labor, the following statements are found as to this system:

The manufacturer is not obliged to take any boy or to keep any boy. On the other hand, the high school is obliged to educate all duly qualified boys, to give them all that the city provides. * * * The people have no hand in this plan. * * * Under this plan the veto power over the boy's right to public industrial education is in the hands of the manufacturer.

The committee points out that a manufacturer could refuse to take or keep a boy who should take a definite stand for trade unionism or whose father should have done the same; that the cooperation would so bind the hands of the teachers that they could offer but little resistance to inculcation by the employer of antiunion principles, and that a spirit of undemocratic exclusiveness would be apt to arise among the accepted boys against their excluded fellows. To sum up, they state that:

Any scheme of education which depends for its carrying out on a private group, subject to no public control, leaves unsolved the fundamental democratic problem of giving the boys of the country an equal opportunity and the citizens the power to criticize and reform their educational machinery.

¹ Nat. Soc. Promot. Indus. Educ., Bull. No. 11, p. 118.

² Amer. Fed. of Labor Report, pp. 11, 12.

³ Wright, pp. 542.

These objections must be borne in mind, but it seems as if no scheme for training our future workers wholly or in part in the shops could be made independent of the selection of those trained by the employer. The conclusion would seem to be that, if the cooperative system for industrial training increases in extent, other means of industrial training should be also kept open to our boys.

Despite recent increases in the number of public technical and trade schools, private schools, which are first in the field, are still the more numerous and exercise the greater influence on the industrial situation. Of these the New York Trade School, founded in 1880, was first in offering short trade courses in the building trades, taking day students about four months for completion; while the Baron de Hirsch School, also in New York City and founded in 1891 for Hebrews, offers short day courses of five and one-half months, leading to the position of helper. In San Francisco, the Wilmerding School of Industrial Art for Boys, established in 1900, offers four-year courses in the building trades, with the practical side to the fore and occupying the entire last two years. Other schools privately endowed like the above exist in small numbers and offer courses varying in length from the short four or five months' courses to those lasting several years. The latter include generally a modicum of general academic training and a larger share of technical work. Some, as the Manhattan Trade School for Girls, are exclusively for girls.

In very recent years States and cities have taken up the establishment of trade schools and founded the following: State trade schools, at New Britain and Bridgeport, Conn.; the Worcester Trade School, Worcester, Mass.; the Wisconsin State Mining Trade School, at Platteville, Wis.; Saunders' School of Trades, Yonkers, N. Y.; the Portland School of Trades, Portland, Oreg.; the Philadelphia Trades School; the Columbus Trades School, Columbus, Ohio; the Milwaukee School of Trades for Boys; the Girls' Trade School, of Boston, Mass.; the New York Trade School for Girls, Syracuse, N. Y.; and the Milwaukee School of Trades for Girls. These schools do not differ materially from the privately endowed schools whose example they follow. A number of private trade schools run for profit are also in the field, offering generally very short courses of three or four months. This type of school assumes to train journeymen, and meets the most determined opposition of the trade-unions.

A similar group of day technical schools, mostly private, ministers to a more general need.² There is much ambiguity in the use of the terms "industrial" and "technical" as applied to schools, and they are often used interchangeably. Industrial schools are in the broadest sense any and all schools which have a function or purpose

¹ Nat. Soc. Promot. Indus. Educ., Bull. No. 11, pp. 33-41; and 26th An. Rep. Commis. of Labor, 1910, Indus. Educ., pp. 91-141.

² Nat. Soc. Promot. Indus. Educ., Bull. No. 11, pp. 42-72.

directly related to industry; in the narrower sense they are those schools which train in the general aspects or bases of industry, as drawing, mechanics, and applied mathematics, but do not specialize their training to the extent of teaching specific trades. Technical schools are those which instruct in the technic of industry in general or of special industries, particularly the latter. Thus a polytechnic school is one which concerns itself with the special technics of a number of industries. A technical school aims to teach the science as distinguished from the art of a trade or industry. It aims primarily to show the student the meaning of the processes studied rather than to train him to dexterity in their execution. Many schools are part technical, part trade schools, but the functions are more or less distinct. No school is a trade school proper which fails to teach the pupils to perform the actual processes of the trade, and merely makes clear to them the meaning of those processes.¹ Thus a trade school is primarily concerned with the art as distinguished from the science of a trade or industry. A trade school need not attempt to take the place of an apprenticeship.² The textile schools, established in Massachusetts under State law of 1895 and elsewhere are technical and not trade schools, and expect practical experience in their pupils, either before or accompanying their school work.

Since 1906 a new type of school has arisen rapidly. This is the general industrial preparatory trade or vocational school, of which there were 12 in 1910, all public,³ 9 of them founded in 1909, and 8 in New York State. These schools aim to attract and retain in school for two or three years those pupils who would otherwise leave at the completion of the common-school grades or before, to turn their attention toward the opportunities offered in the manual trades and to furnish such basic industrial training as will provide industrial intelligence and make for rapid advancement in subsequent apprenticeship. The work is usually about equally divided between classroom and shop and becomes more specialized toward the end of the course. It is this class of school which was strongly desired by both employers and employees, according to the New York report quoted above.⁴

Such schools would aim to instruct their pupils in the elements of both theory and practice of those processes fundamental or common to a group of trades. Such groups of trades or industries (or workers), important in the United States, are: (1) Woodworking industries; (2) iron and steel working industries; (3) bookbinding and pasting trades; (4) printers' trades; (5) leather-working industries; (6) textile industries (factory type); (7) clothing trades; (8) engineers and firemen (and representing "less evident possibilities of approach for

¹ See preface, p. 7.

² An opposing view is presented in 25th An. Rep. Com. Labor, p. 12.

³ Nat. Soc. Indus. Educ., Bull. No. 11, pp. 2-22.

the intermediate industrial school''; (9) stone-working industries; (10) clay and glass industries (using furnaces); (11) paint, paper, and plaster industries; (12) food manufacturing industries; (13) tobacco industries; and (14) miners and quarrymen.¹ The existing schools of this type have naturally tended to specialize their efforts to meet the needs of industries locally important.² This will doubtless continue to be done, as there will be neither need nor usually means for such a school to train in all of the groups of trades mentioned above, or similar ones.

More important than any of these types of schools in their present influence on the industrial situation, whatever the future may bring, are the numerous evening schools.³ These are of many kinds, public, privately owned, and profit seeking, and both technical and trade schools or a combination of the two. Most of the day trade and technical schools, such as those above referred to, also give evening trade or technical courses or both. These courses are in part improvement courses, in that they are largely attended by those already engaged in the trades, and desiring either to supplement their practical shop experience with some scientific knowledge of the technic of the industry or to add a general shop training to the narrower training on a single machine, or in a single department, that has been theirs. Evening schools are subject to the serious limitations that the students are tired from the day's work, and that any thorough course must occupy a long period, as several years, and few persevere through a long course.⁴ Prof. Sadler, who is thoroughly conversant with the numerous evening schools of England, says that about half of the students attend only about half of the time. Notwithstanding, evening schools are in great demand; and for short trade and technical courses, chiefly to supplement some knowledge already obtained of a trade, they have a great and largely unoccupied field of usefulness before them. Prof. Richards, director of Cooper Union, states that "in Europe evening schools are the main instrument of industrial education."

Deserving special mention among evening schools are the classes in the many branches of the Young Men's Christian Association. According to the Department of Commerce and Labor, there were

¹ Nat. Educ. Assoc. Com. Rep., pp. 65-68.

² Nat. Soc. Promot. Indust. Educ., Bull. No. 11, pp. 8-21.

³ *Ibid.*, pp. 41-111; 25th An. Rep., pp. 211-346.

⁴ John L. Shearer, president of the Ohio Mechanics Institute at Cincinnati, voices thus strongly a general view of those who know the facts: "For moral reasons I can not sanction the establishment of departments in our public schools which make it optional for a child to attend either in the daytime or in the evening. The temptation becomes too great to utilize the child's ability for commercial purposes, and the consequences of this irregular training become a serious burden upon the public in later years. I have not found that evening classes for children are productive of good results, but rather leave in their train many serious evils. This brings me then to what I consider the legitimate sphere of the night school. It should be a good school for adults and not for children."—Rep. Wisconsin Comm. on Indus. and Agric. Training, p. 22.

in 1902, 6,000 men and boys enrolled in their classes; while in 1910 there were 50,000 employed men and boys receiving instruction under 2,250 paid teachers, two nights a week for half the year, in 140 different commercial and vocational subjects.¹ The students bear in membership and tuition fees, a part of the cost of instruction. The technical courses are such as mechanical, architectural, and freehand drawing, physics, chemistry, electricity, plan reading and estimating, concrete and steel engineering; while the trades taught include among others carpentry, pattern work, forging, and tool making, machine shop practice, and plumbing.

Closely akin to the evening schools, and to be classed with them as performing the same function so far as the technical aspect is concerned, are the correspondence school courses which have attained such wide publicity in recent years.²

One of the chief of these states that its purpose is to teach the theory of engineering and of trades to those actually at work in those activities, and the other schools perform a similar function. They are thus distinctly technical schools. They are usually private, profit-taking enterprises. In two leading correspondence schools the tuition fees vary from \$20 for the shorter to \$120 for the longer courses. So great has been the demand for their services, not only in places where there were no other technical schools, but where these were available, that one of them had enrolled 300,000 students, in 1902, and had enrolled up to 1910 a total of over 1,300,000. The method of these schools, though ridiculed at first, has proven to be quite effective. Much of its success has been due to the division of all subjects into short lessons, stated in simple, explicit language, and illustrated whenever necessary, forming each a unit by itself, and containing what is necessary to understand the next lesson, and no more. Competent instructors correct all written and drawn work, and give special attention to those who need it. Where the number of students permits it, traveling instructors now meet the students in a locality for an hour every week or every two weeks. To complete the longer courses usually requires five or six years, but graduation is not so urgent as in most schools, because the student is, as a rule, working at his trade while studying. The Union Pacific educational bureau for information has since 1909 supplied expert tuition without cost to its employees by mail. Trade-unions approve of this type of school, as they do of all schools designed to increase the efficiency of those already in trades, as distinguished from those which increase or which they think increase the number entering the trades.

Industrial schools for girls are not numerous, and are mostly private philanthropic institutions. Their work usually includes

¹ Nat. Soc. Promot. Indus. Educ., Bull. No. 11, p. 101.

² 17th An. Rep. Com. Labor, pp. 222-224; 25th An. Rep. Com. Labor, pp. 249-250.

domestic science, whose purpose is oftener to prepare for housekeeping than for wage earning. The distinctly trade courses are almost entirely limited to dressmaking and millinery¹ showing often a lack of study of vocational opportunities open to girls and women.

Having now completed our brief survey of existing schools, let us glance for a moment at the tendencies of recent State legislation with regard to industrial education of various sorts.² Massachusetts, New York, and Connecticut have enacted laws providing State aid to free public industrial or trade schools; New Jersey has legislated for State aid for free privately established schools; and Wisconsin allows cities to establish trade and industrial schools at their own expense. These States are in the lead in respect to industrial education legislation, but a variety of other legislation in other States has been passed in very recent years. Thus, according to Bulletin No. 12 of the National Society for the Promotion of Industrial Education, the following State legislation is now in effect, covering the field of free public secondary industrial education of a practical type, as distinguished from a cultural:³

States legislating on and giving aid to industrial education.

	Number of States.	States giving aid.
States not legislating with respect to some type or types of practical activities.....	19	6
States legislating with respect to practical activities.....	29	16
States providing for technical high schools.....	10	1
Providing for manual training.....	18	9
Providing for training in domestic economy.....	11	11
Providing for agricultural training.....	19	13
Providing for industrial and trade training.....	11	8
Providing for all the practical activities.....	3	2

So recent is the bulk of this legislation that it can be said: "The first State subsidy for agricultural or trade training of secondary grade of any significance was not granted until after the close of the last century."⁴ Some of this legislation is in advance of its utilization by the localities. The authors of the bulletin above referred to declare:

The further development of public vocational education would seem to be dependent in large measure upon legislation providing for State initiative, State subsidy and a reasonable degree of State control.⁵

One item of recent legislation would seem to call for note⁶ and that is the Ohio compulsory attendance law of 1910 for part-time schools. The part of the general compulsory attendance law which deals

¹ 25th An. Rep., p. 203.

² Nat. Soc. Promot. Indus. Educ., Bull. No. 12, Legislation upon Indus. Educ. in U. S.; texts of the recent laws are found in 25th An. Rep., pp. 499-515.

³ Nat. Soc. Promot. Indus. Educ., Bull. No. 12, pp. 242.

⁴ Ibid., p. 25.

⁵ Ibid., p. 25.

with this feature declares that, in school districts where part-time classes are provided for the instruction of youths over 14 who are engaged in regular employment, a new obligation to attend such schools for not over eight hours a week in the daytime (between 8 a. m. and 5 p. m.) during school term is imposed on all youths under 16 who have not satisfactorily completed the eighth grade of the elementary schools, until they shall have completed the eighth grade or have reached their seventeenth birthday.¹ The success of this new experiment, and the way different classes receive it, will be watched with much interest.

Superior in scope even to the Ohio law is the Wisconsin compulsory improvement school law of 1911, according to which boys and girls between 14 and 16 who are working under legal permit must attend an improvement or other school established for the purpose, wherever such school exists, for five hours a week and six months in the year. Employers must release their youthful workers so obligated for a number of hours equal to the hours of compulsory school attendance. This law, based on German experience, is of the type recommended in this study. It is but an opening wedge, for the compulsion is dependent on the action of the locality in establishing the proper school, and extends only till the child is 16 years old. Notwithstanding these limitations, inherent in any pioneer law of this sort, the act marks Wisconsin as the State which at present leads the van in the movement for really popular industrial education.²

¹ Nat. Soc. Promot. Indus. Educ., Bull. No. 12, p. 35.

² See Appendix B. The Wisconsin Apprentice Law of 1911. The text of the compulsory improvement school law is reproduced at the close of this appendix. The apprentice law and the school law should be studied in conjunction with each other.

CHAPTER IV.

RESULTS AND OMISSIONS OF OUR INDUSTRIAL EDUCATION.

What are the net results of our present industrial education agencies to date? In ~~number~~ of students raised in proficiency the results are small for a country so large as ours. In quality of work some institutions have done very well. The following are concrete results in terms of positions and wages: The income received during five years by apprentices of the North End Union School of Printing, above referred to, is \$2,800. Subtracting the \$100 for tuition the first year, the net amount is \$420 greater than that earned during the same period by a boy taking a regular shop apprenticeship with no trade schooling.¹ The graduates of the Baron de Hirsch Trade School of New York City, with short trade courses of about five and one-half months, increase their earning capacity by the course from an average of \$5.39 to an average of \$7.54 a week, and usually reach journeyman grade in two or three years.² The Manhattan Trade School for Girls, with courses of about one year, sends out girls who earn from \$3 to \$8 a week at once and \$4 to \$12 a week after two to four years in their trades, with a few operators reaching \$25.³ The graduates of the Philadelphia Trades School, with a three years' course, begin work at an average wage of \$9.50 a week.⁴ Of the Williamson Free School for Mechanical Trades, all the graduates to date, 726 in number, are in the trades which 95 per cent of the graduates enter at once at 60 to 100 per cent of full journeyman's pay.⁵ About half of the graduates of the Wiknerding School for Industrial Arts for Boys, in San Francisco, have been accepted on the completion of their four years' course as full journeymen, while others have received two to three years' credit toward the completion of an apprenticeship.⁶

Concerning technical schools, the earnings of older graduates of the Hebrew Technical Institute of New York City are \$60 a week,⁷ while the graduates of the California School of Mechanical Arts are given credit for two to four years of apprenticeship and advance rapidly.⁸ The Massachusetts commission's report shows that in the machine trades shop-trained boys rise from \$4 to \$12 a week by the time they

¹ Wright, pp. 57-60.

² Nat. Soc. Promot. Indus. Educa., Bull. No. 11, p. 41.

³ Ibid., p. 42.

⁴ Ibid., p. 28.

⁵ Ibid., p. 45.

⁶ Ibid., p. 35.

⁷ Ibid., p. 63.

⁸ Ibid., p. 60.

are 25 years old, while boys trained in technical schools rise from \$10 to \$30 a week.¹

The above facts are presented here as indications, but not as proofs in any exact sense, of what these schools have accomplished. They show that such schools can accomplish and have accomplished useful results, and specifically that trade schools can considerably shorten the necessary period of apprenticeship and make for superior ability. From the other types of schools increased efficiency and promotion have come in a great number of cases. And yet the schools are so few, the need so great, that public initiative is urgently demanded. Our provision for industrial education in this country is still mainly private and may be summed up as good, though not ideal, means for training industrial leaders with almost no industrial training for the rank and file.

What, in brief, can we legitimately and reasonably expect that industrial education will do for our workers, for our industries, and for the whole people? In a few, and perhaps an increasing number of cases, we can expect higher skill and better products to result than had before existed. Such results are most likely in the broad field of art and design in industry. The main direct result of widely extended industrial education will be the wide diffusion of industrial intelligence, more or less general in its nature, and of specialized skill in a great variety of lines. That the proper types of schools can impart these qualities has been proved both in the United States and abroad. This industrial intelligence and specialized skill can hardly be expected, in the near future at least, to surpass in quality that now found in our midst; the gain will be rather in quantity. A larger number and proportion of our industrial population than at present will be skilled workers.

But can places be found for this multitude of skilled workers? Will not many of them, with the training and outlook of skilled men and women, be forced to labor at work below their abilities? Are not the relative needs of industry for skilled and for unskilled workers, as well as for different grades of skilled workers, fixed? And does not this limitation of the needs of industry for skilled workers doom a large portion of our population (substantially as at present) to unskilled or relatively unskilled positions throughout their lives? In recent years especially the demands of industry seem to be for many unskilled (or but slightly or very narrowly skilled) and for a few only of thoroughly skilled workers. If this limitation were rigid, our efforts along the line of strictly industrial education should be limited to the training of only enough workers to fill the skilled positions, each with a grade of skill limited to the possibilities of his posi-

¹ Rep. of Mass. Com. on Indus. and Tech. Educ., Apr., 1906, pp. 67-68.

tion. The situation is, however, more hopeful than this. Many unskilled or slightly skilled workers are now demanded by industry chiefly because their labor is cheap, while our manufacturers would gladly employ more skilled workers could they secure them. For the country as a whole, their numbers are at a given time fixed. Individual employers can secure more skilled workers only by paying rates of wages which often they can not afford. If, then, industrial education becomes general in the United States, the increase in the number and proportion of skilled workers available will force a readjustment of industries by the mere fact that such a readjustment will become profitable to employers. They will find it worth their while to contract the number of unskilled workers whom they employ and to increase the number of skilled workers. To the individual employer the motive for this change will be pecuniary; he will have to pay relatively more than before for unskilled labor, less than before for skilled. Further, there are some who hold that, aside from the cost of labor, the modern industrial army of few captains and many privates will undergo a transformation and that many skilled workers of various grades—the noncommissioned officers of the army—will come to be demanded. Such an increase in skill required of many of its workers has accompanied the modern tendency toward intensive cultivation in agriculture. It may yet open broad opportunities for the average man in industry.

With the probability then of increased opportunity for skilled workers, what advantage will those workers derive who now have to enter unskilled work, but who, with large opportunities for industrial training, can become skilled workers? We may confidently expect that increased opportunities for industrial education of the right kinds will raise the real wage of vast numbers of our people and greatly increase the sum of well-being in the country. All classes will benefit, directly or indirectly, by these educational opportunities. It is a corollary of modern economics that it is well for a man or for a group to have prosperous neighbors rather than poor. Employers will benefit by a larger supply of skilled labor, thus increasing their ability to compete with foreign producers both at home and abroad, and enlarging their home market as a result of cheaper products.

Chief among the defects of our present industrial schools are their defects of omission: A large and important field is all but unoccupied by them. In 1905 a report was made by the Commission on Industrial and Technical Education of Massachusetts which revealed a striking condition of the working children of the State, both boys and girls, which is probably largely true also of other highly industrialized States.¹ About five-sixths of the children, it is found, leave school during the seventh and eighth grades to take up industrial

¹Rep. Mass. Commission on Indust. and Tech. Educ., 1905, pp. 22-23.

pursuits.¹ These children, about 25,000 in number, of the ages of 14 and 15, go for the most part into industries of the lower grade, which, indeed, are almost the only ones open to them. To quote from the report, "33 per cent of the children of this State who begin work between 14 and 16 are employed in unskilled industries, and 65 per cent in low-grade industries, thus a little less than 2 per cent are in high-grade industries." The low-grade skilled industries in which child labor is much used are less desirable also than those where it is not. The class of family seems to have little to do with the trade or industry into which the child enters, nor is the industry much affected by family connections, except in the cases of a few desirable apprenticeships. "All grades of families are represented by their children in all grades of industries."

The employers in practically all real trades that offer a future do not want the boy or girl until he or she is 16 years old at least, and in many cases not until he is 18. This evidence is confirmed by the New York report above referred to, as well as by other sources. Trade unions, in most cases, do not impose a higher age limit for apprentices than is acceptable to employers; in fact, the union minimum is usually below what the employer will accept for those industries where a bona fide apprenticeship holds. In most of the industries into which Massachusetts children of 14 and 15 go, however, there is no apprenticeship system, but merely child labor. Not only is it very hard for a child below 16 to obtain employment in one of the better industries, but the beginning wage in these industries is so low that few children will accept it, even when they may. The low-grade industries pay more at first, but reach their maximum in three or four years as a rule, and thereafter offer no chance for advancement for any not specially trained. This maximum averages from \$7 to \$8

¹ The high proportion of pupils leaving school for all causes is best stated by the following figures from cities throughout the country contained in U. S. Bu. of Educ. Bull., 1911, No. 5: Age and Grade Census of Schools and Colleges, by George D. Strayer, from which the following figures are quoted (pp. 135-136): Median per cent of the largest age group (assumed to equal the number of pupils entering all grades each year) found in each grade (data obtained December, 1908, from 317 cities):

Grades of pupils.	Cities of over 25,000.		Cities of less than 25,000.	
	Boys.	Girls.	Boys.	Girls.
Seventh year.....	(55) 65	75	70	70
Eighth year.....	(42) 80	80	80	80
Ninth year.....	47	80	47	45
First year high school.....	35	45	40	80
Fourth year high school.....	10	15	12	20

Studies by graduate students in Teachers College, Columbia University, as quoted in the above report, show that a fair estimate of the number of repeaters would be 10 per cent of the total number in the seventh, and 8 per cent in the eighth grade. The figures above in parentheses represent for two cases the estimated actual number of pupils entering the given grades. On the whole, these figures confirm those of the Massachusetts report, though indicating that the country as a whole keeps its children longer in its schools than the Massachusetts cities studied.

a week, with \$9 to \$10 as the upper limit. The training offered the child in these low-grade industries, in which seven-eighths of the children below 16 work, is negligible, and from the standpoint of their development the years can be called, as they are called in the report, "wasted years." The net weekly contribution of the child to the family through this work, above car fare, clothes, etc., is estimated to average but little over \$1.50. The boy or girl who does not start work till 16, though commencing at a lower wage, is able to reach the wage of his fellow of the same age who started at 14 in two years and has probably earned a total to equal that of him who had the start in four years. The younger children change frequently from mill to mill, and once having left the public school are not to be tempted back by any attractions now offered there, but rather drift around aimlessly.

The gain thus of this early work is negligible in training and but very slight in money. Yet the families, in most cases, are not so poor that necessity drives them to set their children to work at the earliest opportunity. The experts of the commission estimate that 76 per cent of the 3,157 families investigated would be able to give their children the advantages of industrial education if persuaded of its advantage. Industry has shown that it does not greatly desire the children so young, as indicated by the meager wage and opportunities it offers. The children are not mature enough to undertake any responsible work; these are the years best suited for the training of the child, and education at this time along lines that relate closely to the child's future will richly pay for itself in the future both in money and in efficiency. The testimony of the investigation from the evidence of case after case is that, except among the poorer foreign families, the child insisted on leaving the school, the parents objected, but the child had its way. What then draws the child, with so uniform and powerful a force, from school to mill? It is his awakened activity, tired of the conventionality, the unreality of the schoolroom; eager to see more of the world, to live in the active life of the world, to stand on his own feet and earn money by his own activity; to live less in terms of words and books, and more in terms of things and men.

Where does the responsibility for this condition lie and where the remedy? In the schools. The schools fail to hold the child even when his work is worth little to himself or others, because they have even less to offer that in any way attracts him. Of 35 or 40 school superintendents interviewed throughout the State, all but three thought that the fault was in the school system. Would industrial schools succeed any better? All experience so far indicates that they would, if there was enough of the practical and vocational about

them to arouse the child's interest, and a promise of a better opportunity in the world of industry to stimulate his imagination and diligence. The results of the Massachusetts report have opened the eyes of many to the likelihood that the child is likewise limited in other States also.¹ The need for industrial schools to redeem these "wasted years" and make them fruitful is imperative. Industry is conspiring with educational forces to make the present position less and less tenable, for some of the industries now employing children—notably the woollen industry (classed as low-grade skilled)—are dispensing more and more with their services. The result is that young children are being forced more and more into juvenile employments and into the lower-grade industries, "blind-alley" employments which offer no future. Before 14 the child's productive capacity is negligible, and between 14 and 16 it is capable of only the simplest processes: The need indicated is for preparatory trade or vocational schools, which shall teach children between the ages of 14 and 16 the elements of practical handling of tools and industrial materials, and of the principles underlying industries, each student specializing in a certain type or group, as metal working, wood working, etc. This type of school is what is called the general industrial, preparatory, trade, or vocational, and is the type so strongly approved of by both employers and unions in New York State.

Another important investigation has recently been made under the direction of the United States Commissioner of Labor, entitled "Conditions under Which Children Leave School to Go to Work."² A survey of the main conclusions of this report will support the data and conclusions of the Massachusetts report and show further need of industrial education, as well as for vocational guidance, for the boys and girls affected.

An intensive study was made of 622 children (below 16 years old) who had left school and gone to work in seven different typical smaller cities in Rhode Island, Pennsylvania, South Carolina, and Georgia. More of the children left school at 14 years of age than at any other age (281 out of 620), the next largest number at 13 years (151), then came 15 years (81), 12 years (53), and lesser ages.³ The following table summarizes the causes for leaving school by the children.⁴ Generally, several causes cooperated to this result. In such case the predominant cause only was given.

¹ "The report of the Wisconsin Bureau of Labor for 1910 shows that only 12 per cent of the children are in positions to learn a trade. These, our report says, are in the building trades, millinery, dressmaking, trunkmaking, and tinning." In some of these, probably, "only a slight division of a trade can be learned."—Rept. of Wisconsin Commis. on Indus. and Agric. Training, 1911, p. 40.

² Vol. VII, 1910 (61st Cong., 2d sess., S. Doc. No. 644), of Report on Conditions of Woman and Child Wage Earners in the United States, in 10 volumes.

³ Ibid., p. 33.

⁴ Ibid., p. 44.

Causes for children leaving school to go to work.

Causes for leaving school.	Number of children.	Per cent.
Necessity:		
Earnings necessary to family support.....	169	
Help needed at home.....	6	
Self-support necessary.....	11	
Total.....	186	30.0
Child's help desired, though not necessary:		
In family support.....	140	
To buy property.....	12	
In home work.....	14	
To earn money for education of self or relative.....	7	
Total.....	173	27.9
Child's dissatisfaction with school:		
Tired of school.....	35	
Disliked school (general manner of life there).....	54	
Disliked teacher.....	31	
Disliked to study.....	16	
Could not learn.....	10	
Not promoted.....	5	
Too big for class.....	14	
Total.....	165	26.6
Child's preference for work:		
Work preferred to school.....	44	
Spending money wanted.....	8	
Association desired with friends who worked.....	9	
Total.....	61	9.8
Other causes:		
Ill health.....	16	
To learn a trade or business.....	6	
Company pressure (exerted on parents).....	7	
Other (specified in detail in original table).....	6	
Total.....	35	5.7
Grand total.....	620	100.0

In cases classed under necessity the existence or absence of necessity was decided by the investigators on the basis of statements made by the family concerned, as to their finances. Usually it was considered that families having a per capita weekly income, after rent was paid and expenses for sickness and death met, of less than \$1.50 a week without the earnings of children under 16, could not unassisted keep their children in school; but that families with a per capita income of \$2 or more, after similar deductions, were able to do so. Those with per capita incomes of \$1.50 to \$2 as above were on the doubtful line, where the degree of thrift decided whether the child's earnings were necessary or not.¹ For all the cases where necessity was the chief reason for leaving school for work, trade or other industrial schools requiring attendance through the day are inapplicable. For these, as for other children at work, improvement schools of the type so widely found in Germany and recently initiated in Cincinnati and Boston might be adopted.

Those families desiring the help of the child, though that help was not strictly necessary, generally regarded work as a child's normal and natural occupation, and were indifferent to school attendance

¹ Vol. VII, 1916 (Hist. Cong., 2d sess., S. Doc. No. 645), of Report on Conditions of Women and Child Wage Earners in the United States in 19 volumes, pp. 24, 25.

(sometimes hostile).¹ The chief need shown here was for more popular awakening to the importance and benefits of education.

Those cases classed under dissatisfaction with school and preference for work show that the schools, as they are, do not interest a large class of children as much as does industrial work.² Of those stated as preferring work—

in most cases it was a real liking for work, rather than for its attendant circumstances, which accounted for their leaving school. For the most part these children did not dislike school; in fact many of them distinctly liked it, only they liked work better.³

Of all the children, 51.1 per cent were satisfied with school and teacher, 48.9 per cent not so.⁴ Even 39.5 per cent of the pupils classified as bright by their teachers were dissatisfied.⁵ That the schools do not provide opportunity to bring out by any means the full capacities of the children is shown by the higher average estimates of their general capacity by their employers than by their teachers. Thus in a classification of all as bright, average, or dull, the teachers classify but 26.1 per cent as bright, the employers 49.4 per cent; while the teachers class 26.1 per cent as dull, the employers but 7.8 per cent.⁶

Would manual or preparatory industrial training in the common schools (the only ones treated in the report) tend to increase the interest of the pupils in their work and hold them longer in school? Answers to this question had to be secured generally from parents and were thus their opinion as to their children's views. They thought in 24.5 per cent of the cases that such training would have increased the desire of their children to stay in school. Columbus, Ga., one of the seven cities investigated, has excellent manual training work and two special industrial schools. There was in Columbus less dissatisfaction by the children in the schools than elsewhere, which would seem to be due to these industrial features did not Columbia, S. C., with no manual or industrial training, have almost as good a record.⁷

Most of the children studied entered unskilled industries, while but few entered trades. But little real choice was exercised by most (88.7 per cent), as follows:⁸

Worked for parents or relatives or at home.....	29
Took first place offered.....	313
Went where friends or relatives worked.....	192
Took something near home.....	16
Total (88.7 per cent).....	550

¹ Vol. VII, 1910 (61st Cong., 2d sess., S. Doc. No. 645), of Report on Conditions of Woman and Child Wage Earners in the United States, in 19 volumes, pp. 60-62.

² Ibid., pp. 52-55.

³ Ibid., p. 55.

⁴ Ibid., p. 110.

⁵ Ibid., p. 120.

⁶ Ibid., pp. 122, 123.

⁷ Ibid., pp. 108, 110-112.

⁸ Ibid., p. 123.

For the remainder, the reasons were as follows:

Wanted to learn trade or skilled occupation.....	27
Attracted by high wages.....	11
Attracted by desirable work.....	31
Set up in grocery business by father.....	1
Total (11.3 per cent).....	70

"Practically 90 per cent of the boys and all of the girls entered industries whose average weekly wage for all employees is under \$10."¹ Though most who entered trades did so by aid of friends or relatives in the trade, there are indications that such aid was chiefly of value in opening the children's eyes to the trade opportunity. Without such special information, nothing awakens the child to the desirability of an occupation promising a future; so he drifts into the first position handy.² This suggests a service which manual training or elementary prevocational training in common schools, as well as intermediate industrial schools, can render—the awakening of the child to an industrial intelligence which shall, among other results, aid him to select intelligently and enter a vocation which promises a future, if that be possible with his family's means.

Purposeful planning or definite ambition existed in the minds of "barely half of the boys and less than half of the girls."³ Often where such ambition existed the work being done at the time bore no manner of relation to this ambition and furthered it not one whit.⁴ A much larger percentage of those who had completed half or more of the school course had definite ambitions for their work than of those who had not gone so far. Since the correlation between age and grade is low, this seems to show "that the schools have had considerable effect in giving the pupils a definite aim in life."⁵ Finally, 167 boys (47.3 per cent) and 108 girls (40.2 per cent) said that if an evening trade school were opened they would wish to go.⁶ Can not these cities, and others, afford to give the children the opportunity they need and wish?

¹ Vol. VII, 1910 (81st Cong., 2d sess., S. Doc. No. 645), of Report on Conditions of Woman and Child Wage Earners in the United States, in 19 volumes, pp. 151, 152.

² Ibid., pp. 186, 187.

³ Ibid., p. 190.

⁴ Ibid., p. 189.

⁵ Ibid., pp. 190, 191.

⁶ Ibid., p. 192.

PART II. GERMANY.

CHAPTER V.

THE BACKGROUND OF THE INDUSTRIAL SCHOOLS.

To understand aright the very successful experiments of Germany in the field of industrial education, some consideration of the nation's industrial background is necessary.¹ Germany has developed very slowly, both in political integration and in industrial improvement. In fact, surprising as it may seem, the greater part of Germany's industrial advances have been made since her final integration into a nation in 1871. While England was leading the world in industrial and commercial advances Germany was lying dormant, unfavored in position, with a naturally poor soil, surrounded by enemies, and with a very conservative population, chiefly agricultural. Long after England had passed through the first and most violent stages of the industrial revolution, and the other countries of western Europe were in the midst of the great changes, Germany awoke from her lethargy and slowly began, under the stern force of necessity, to develop her industries and to give less relative attention to agriculture and more to manufacturing, transportation, and commerce. In one respect the country's slowness of development was an advantage, for the terrible waste of human life and health which accompanied the industrial revolution in England was almost unknown in Germany. Very slowly did Germany, borrowing the tools and ideas of her rivals, or learning them by stealth, develop modern factory industries. Yet the lack of national unity was a great drawback. Not until the tariff union (Zollverein) was formed in 1835 were the first barriers broken down, while the German nation was not able to stand forth as a unity till the fateful days of 1871. Since then German industries, fostered by a strong and paternalistic Government, aided by the best that science can bring and by a fine system of industrial education, conducted by a people hardy, diligent, faithful, subservient to discipline, and inspired by public spirit, have grown in size and strength until Germany is to-day one of the leading manufacturing and export nations of the world.

¹ See Howard: Causes and Extent of the Recent Industrial Progress in Germany; and Spec. Consular Reps., vol. 33, Indus. Educ. and Indus. Conditions in Germany, 1905.

In giving credit to the various factors which are jointly responsible for Germany's industrial successes, the qualities of her eminently industrial people and the stern necessities of her situation should have first place. Germany had few of the natural advantages in which the United States is so rich; her population was among the densest in Europe, and constantly increasing, with no outlet in colonies, and whatever markets she won must be won from rivals first in the field, and, at the start, better equipped than she. It became increasingly apparent as the nineteenth century grew older that Germany's farms could not long support her population. She must import foodstuffs, and to this end must become a manufacturing nation. The present Kaiser sounded the watchword for the country when he declared: "The future of the German nation lies on the seas." The German people realized this, and have steadfastly kept their faces turned toward their foreign markets, and to the many factories where all manner of goods are made, to be consumed from Bremen to Peking.

Other factors in Germany's industrial and commercial success are those which flow from the persistence and thoroughness, typical of the race. The Germans have realized that theirs was not a situation to be dealt with by careless methods, and that the closest mental application was necessary to solve the hard problems before the country. Fichte was largely instrumental in starting the nation, after the defeats by France at the beginning of the nineteenth century, in the paths of careful and scientific investigation and education. The nation followed his methods and has progressed by taking thought. Joined to this general thoroughness is a degree of cooperation for the common interests, through the centralized Government and otherwise, from which much better results can be expected and have actually been obtained than is possible with less centralization. This is evident, for example, in the influence of Government and of guilds on the industrial schools. Finally, the German nation follows the lead of science in her industries and relates science to industry in a marked degree.

Along with Germany's very rapid progress in the past few decades there are aspects of her development not nearly as progressive. Her agriculture, on the whole, is backward, while the whole country suffers from overpopulation and the low plane of living accompanying it. The position of the average worker is a humble one, with little opportunity to rise. The idea of "Stand," that is, business, or more broadly, social position, is a fundamental one in the German thinking. A man has a place in life of which birth is the chief determinant. He is expected to, and he usually does, both conform fairly closely to the type for that Stand and fail to change to another Stand. The medi-

eval idea of labor and enterprise not for profits but for livelihood (according to the requirements of the individual's Stand), still persists and conspires with the difficulty, or nigh impossibility for the great majority, of obtaining a surplus revenue over present needs, to preserve the status quo. On the other hand, the various industrial insurance funds, a better administered poor relief, industrial education, an industrial law well executed, which protects the worker in many ways, combine to make the maintenance of a worker's Stand and place of living surer than in our country. One of the antecedents of the German system of education, especially industrial education, which must be kept in mind, is that a man's Stand, once chosen and fairly started on, can not be as easily changed as in the United States, if at all. If one fails at his chosen business, he fails in life, as there is much less opportunity than with us to change his vocation. This idea both fosters and is fostered by the practice of educating for a special business, whether it be cobbler or diplomat, which is more universally observed than is usual in the United States.

Compulsory military service is a factor in German industries of no mean importance. Requiring of all men, with but few exceptions, two years of service (three if in the cavalry) after reaching the age of 20 years, it affects practically the entire male population.¹ However much of evil this service may involve, in tax burdens and in taking two of the best years of each man's life, German opinion holds strongly to the view that it benefits the country's industries. It is claimed that it strengthens the physique, accustoms to cleanliness, order, and discipline, and makes for self respect.² It has other results which are to the American mind not so desirable. It tends to overemphasize subordination and to subdue excessively the initiative and personality of the worker.

The industries³ of the country are classified under two main heads—factories (or large industries) and handwork (or little industries). A common national industrial law⁴ (Reichs Gewerbe-Ordnung, or Gewerbe-Ordnung) governs all industries, while under its terms and within the limits it sets lesser laws and regulations apply to any particular industry. Much of this national industrial law applies to all industry, while the conflict of years between the two types of industry has resulted in special provisions of the law for each. This industrial law gives no definition of factory nor of handwork; and an official of the Prussian ministry for commerce and industry⁵ told me that the

¹ University students are free from the requirement; those who pass successfully six years work in Gymnasium, Realgymnasium, or equivalent school, receive the coveted certificate committing the service to one year (as so-called "volunteers," with special privileges); there are other lesser exemptions.

² U. S. Spec. Consular Rep., vol. 33, Indus. Educ. and Indus. Conditions in Germany, pp. 271, 272.

³ Industries proper, not including agriculture.

⁴ Reichs Gewerbe-Ordnung (R. G. O.), as in edition edited and annotated by Dr. Hoffman, pub. by Carl Heymann's Verlag, Berlin, 1901.

⁵ Königlich Preussische Ministerium für Handel und Gewerbe.

ministry is as yet unsuccessfully seeking to define certain industries as factory industries and certain as handwork. The difficulty arises from the fact that the two types shade into each other by insensible gradations; in fact a given industry is carried on by some after the factory type and by others after the manner of handwork.

The national industrial law states the following criteria according to which administrative and judicial authorities may decide whether a given business be factory or handwork: "(1) The size and extent of the space used; (2) the extent and value of the annual production; (3) the kind of division of labor and the more mechanical or the more craftsmanlike cooperation of the workers; (4) the more or less extensive use of machines; (5) production on the basis of special orders and retail sale, or for a stock of goods or large-scale production (or partial production); (6) the character of the industry as a by-industry of the machine or large industries, especially the preparation of specialties; (7) the personal sharing of the business head in the production of the commodity, or the limitation of his activity to the commercial superintendence; (8) the training of apprentices according to the manner of handwork, and the employment of youthful workers" (who are not apprentices, which is typical of factories).¹

This division into handwork and factory industries is profoundly important in all industrial questions in Germany. The country has been and remains slow in substituting modern factory types of industry for the older and more simply organized handwork. Not that factories as large as any do not exist in Germany, but the proportion of workers busied in them is probably less than in the United States; how much less is very hard to tell. Census figures for 1907 show the following proportions of all industrial workers in establishments of different sizes:²

	Per cent.
Persons working alone.....	10.1
Persons in establishments employing 2 to 5 persons.....	19.4
Employing 6 to 10 persons.....	6.6
Employing 11 to 50 persons.....	18.4
Employing 51 to 200 persons.....	20.1
Employing 201 to 1,000 persons.....	17.3
Employing over 1,000 persons.....	8.1

The lesser importance of factories in Germany has made some of the industrial problems easier to solve than they are in the United States. This is notably true of apprenticeship and industrial education, whose hardest problems on both sides of the water are connected with factories.

¹ R. G. O. (Imperial Industrial law), p. 297.

² Böcher, Karl. "The Law of Mass Production," in *Zeitschrift für die gesamte Staatswissenschaft*, 1910, 3. Heft, p. 490.

In certain trades and among certain people in Germany handwork is sure of a permanent place. The building trades, for example, will probably always require the general type of industry and organization which now obtains in handwork. All trades, or cases of practice of trades, where individual orders are the rule or small local shops are needed or artistic design is the chief consideration, will continue to be carried on after the craftsmanlike manner of handwork. Another stronghold of handwork is the farming population in some districts, who, when farm duties do not press, supplement their scanty incomes by manufacturing a great variety of tasteful and useful articles. The German people as a whole realize the advantages of the handwork type of industry, and with traditional conservatism have opposed the rising prominence of factories and are striving to keep all industries possible in the fold of handwork. In this effort they not only show that "in Germany, as in no other country the people have been unwilling to break with their past," but they are also conserving that type of industry in which the personal and more human factors have a fair chance to control the situation to the welfare of all concerned, and limiting the application of that type in which the technical factors tend to ride rough-shod over the personal, often to the benefit only of the consumer.

The laws and institutions by which the Germans have attempted to solve the hard problems of apprenticeship and industrial education center chiefly about handwork, for the problem in the factories is to-day far from solved. In the same sphere of industry our greatest problems of industrial education lie. Germany can help us by her example in our efforts to solve these problems. But her greatest triumphs have been in the sphere of handwork, and we must modify the lessons she teaches to suit the greater importance of factory industries with us.

The degree of specialization attained in German industries is of the utmost importance in her attempted solutions of the problem of industrial education. How much specialization exists is, however, extremely difficult to discover and would require for a complete answer an extensive investigation. I can offer a limited amount of data on the subject.

By specialization, for the present purposes, we may understand the practice by each worker of only a more or less narrow subdivision of a trade. This definition suggests the question, What constitutes a trade—a wide or a narrow range of operations? No precise answer can be given, or rather, the type of answer varies from trade to trade. German trades, like those of the United States, show a gradual tendency to split up; while new and formerly unheard-of trades constantly develop. But in Germany, in some cases, the original trades

were (and are) more comprehensive than those in the United States, and so the splitting up of these more comprehensive groups of operations results in less of specialization than in the United States. For example, the complete trade of the German Klempner (plumber) includes plumbing, gas, water, and steam fitting, sheet-metal work, miscellaneous repairing, and generally also electrical fitting.

Another feature of German specialization, found probably less often in the United States, is the training of workers in handwork, where they learn their whole trade, and then later specialize in factories. Thus a plumber will learn the whole of his trade in an old-style shop, or a branch of it only in newer more specialized ones. This training will generally include electro-technics. He can then enter as a journeyman a factory manufacturing electrical goods and learn and practice a specialized branch of his trade, as armature winding. The handwork masters say that by this process the factories withdraw the best journeymen from handwork.¹ The Reichstag, in an inquiry into the conditions in handwork instituted in 1895, stated that in their opinion the number of handwork journeymen who had entered factories far exceeded the number remaining in handwork.² This type of specialization has a manifest advantage over that practiced in many or most factories in this country, in that it is subsequent to and rests on a general practice and acquaintance with the whole trade or a large branch of it.

The extent of specialization varies greatly from locality to locality, often even though these may be adjacent. In general, we may say that, as in the corresponding industries in the United States, specialization has gone far in factories, but not nearly so far in handwork. Many handwork shops, however, carry on but a part of the whole trade. For example, some cabinetmakers practice all branches of their trade, some make only interior house "trim," some only furniture, and some only certain sorts of furniture. But businesses which make, for example, only chairs, or only chairs of a certain type, are usually among those classed as factories. Informants stated that there was little specialization in their locality in Mannheim, Coblenz, and Cologne; that there was little specialization in handwork in Chemnitz, Elberfeld, Dortmund, Essen, and Aachen; and that there was much specialization in Berlin, Munich, Frankfort on the Main, Barmen, Duisburg, and Dusseldorf (in most of these cities both in factories and handwork). To be cautious, a large allowance should be made in dealing with this data for the personal outlook of the informants, probably often biased by one-sided special knowledge. Of one thing we may be sure: The problem of industrial education, as in the

¹ Dusseldorf Handwerkskammer.

² *Statist. Ber. d. Reichs-Ind. u. H. B. 1895-97*, 3:22, quoted in Coale, Dr. Hans. *Deutsche Leibes- und Geistesbildung*, 1910, p. 122.

United States, is not identical for different sections of the country. To sum up: The fact and the problem of specialization are the same in the two countries, but the United States has the problem in an acute form, both because more of our industries are of the factory form and because specialization in small and less specialized shops (corresponding to German handwork) has gone further than in the older country.

The ordinary workman, specialized or not, the private in the ranks, has in all the initiative and management of the business in which he works, and often in its welfare institutions also,¹ but little say. The prevailing sentiment of the middle class seems to be that he should be kept from much or any influence or control in industrial matters. Yet the workers do not so regard the matter, and many of them are striving with great energy for more democracy in industry.

The German trades-unions are less strong and unified than those of England and the United States.² The right to combine is guaranteed under the law to all employers and employees, except servants, farm workers, and sailors. Strikes and lockouts are legitimate, but the means by which they are carried on are more closely regulated than with us, and the rights of the unions in general more restricted. Politics are prominent in the German unions and divides them into three separate camps. Of these, that of the "Free," or Social Democratic unions, is by far the largest, numbering about 700,000 members. It is closely associated with the Social Democratic Party, pays relatively little attention to mutual aid within the union, and much to political activity without. The "German" or Hirsch-Duncker unions number about 100,000 members and are framed on the English model, with mutual aid or benefit features prominent, and a less militant political attitude. The third group, of less than 100,000 members, is that of the "Christian" unions, formed under the influence of the Roman Catholic Church as a protest against the atheistic and radical social attitude of the Social Democratic unions.

Distinct from the unions are the guilds, some of them descended without break from the bodies which so dominated industry during medieval and early modern days.³ These hold such peculiar and important relations to industrial education and apprenticeship that they are worthy of fuller consideration, which I offer in the chapter following.

¹ Note an exception, ch. 6, p. 58.

² Bulletin No. 27, Bureau of Labor, pp. 314-326.

³ Spec. Consular Rep., vol. 33, pp. 264-265.

CHAPTER VI.

GUILDS AND CHAMBERS OF INDUSTRY.

The industrial revolution, which came in Germany more as an evolution, broke down the power of the old-time guilds (Innungen) and left industry with few helmsmen save the heads of individual firms. The permanent interests of industry, as well as the public interest, suffered in consequence. Especially was the lack of the former guild regulation seen in the defective training given to apprentices,¹ and a multitude of other abuses sprang up, among which those pertaining to apprenticeship were chief. Uncontrolled competition was weighed and found wanting by the Germans. Regulation there must be, and yet preferably regulation in which the undertakers of industry should have a share. To meet this need, the old-time guilds were revived, and in place of their old-time powers, new rights and powers were given to them. A few of the old-style guilds were reorganized on the new basis, but most existing guilds have arisen during the last few decades, under the new laws. These guilds are designed primarily to meet the needs of handwork, and have almost no bearing on factory industries. Very few factories have any connection with guilds.²

Guilds are either free or compulsory. Any independent tradesman may establish a free guild³ for a trade in a definite district.⁴ The requirements for membership are:

(1) That the candidate carry on independently the industry for which the guild is organized, and in its district; or (2) that he be a foreman or in a similar position in a factory engaged in the same industry as that of the guild; or (3) that he shall have formerly held one of the above positions and now practices no other trade; or (4) that he be a handworker engaged in agriculture or industry for wage. The ability of the candidate to carry on the industry independently may be determined by examination. No qualified person may be denied membership, and no exceptions to these rules are allowed.

The purposes or duties of the guilds are stated by law to be the development of an esprit de corps and trade honor; the promotion of friendly relations between masters and journeymen, as well as care for journeymen's homes (Herberge), and information about

¹ Coelch, Dr. Hans. *Deutsche Lehrlingspolitik im Handwerk*, p. 86.

² An engineer of Fried. A. G. Krupp.

³ B. G. O. (Imperial Industrial Law), sec. 81, pp. 284.

⁴ *Ibid.*, sec. 83, pp. 290f.

⁵ *Ibid.*, sec. 87, pp. 290f.

employment; the detailed regulation of apprenticeship, and the care for the technical, industrial, and moral training of the apprentices; and the decision of disputes between guild members and their apprentices.¹ Besides these prescribed duties, guilds have certain other permitted activities. They may establish and support schools for industrial, technical, and social education of masters, journeymen, and apprentices.² They may hold journeymen's and master's examinations and certify the candidates which pass them. They may establish funds to aid their members and their employees in case of sickness, death, inability to work, and other emergencies. They may establish guild courts, which shall take the place of the regular authorities as the court of the first jurisdiction, in the settlement of disputes between members and their employees. Finally, they may establish a common business to promote the interests of the guild members.

The statutes of the guilds must regulate within the limits allowed by law, and by the regulations of the Government authorities and chambers of industry,³ a number of matters, including the supervision of the regulations of the activities of journeymen, apprentices, and other workers, and those for attendance on improvement or trade schools, and for the regulation of apprenticeship.⁴ Deciding on the detailed statutes for the regulation of apprenticeship is one of the (10) most important kinds of business which can not be delegated to the directorate, but must be undertaken by the guild assembly.⁵ The guilds are authorized to supervise, through agents, the execution of the legal and guild regulations in the industry for which the guild is organized. Such agents of the guild as are selected must be allowed access to the workshops and employment rooms of guild members during working hours.⁶ These regulations do not apply to any workrooms which are parts of agricultural or factory industries,⁷ which indicate that the guilds are designed distinctly for handwork.

The guilds are under the close supervision and authority of the subordinate Government administrative authorities.⁸ All guild statutes, as well as any amendments to them, must be approved by the proper authorities.⁹ The guild institutions, as schools, insurance funds, etc., must be administered under special regulations, to be approved by the legal authorities.¹⁰ If a guild neglects to submit to

¹ R. G. O., sec. 81a, pp. 254, 255.

² Ibid., sec. 81b, pp. 256ff.

³ Ibid., sec. 81a, 2, p. 254.

⁴ Ibid., sec. 83, 10, p. 260.

⁵ Ibid., sec. 83, 5, pp. 260ff.

⁶ Exceptions: If a master fears harm from such inspection, he can provide at his own cost a substitute, who shall furnish the directorate such information as they desire.

⁷ R. G. O., sec. 94c, pp. 285ff.

⁸ Ibid., sec. 95, p. 286.

⁹ Ibid., sec. 94, pp. 285ff.

¹⁰ Ibid., sec. 95, pp. 286ff.

the proper demands of the legal authorities, these may appoint a representative who adjudicates guild disputes and takes initiative if necessary. No final decision can be reached by a guild on amendment of its statutes or by-laws, or its own dissolution, without the presence of a representative of the authorities.¹

Of great interest as indicating a trend toward democracy in industry, or a revival of the voice of journeymen in the old-time guilds, is the journeymen's committee. All journeymen employed by a guild member, and in possession of citizens' rights, may vote for members of the committee of journeymen.² This committee takes part in the guild affairs as largely as the law and the guild statutes allow. It is concerned especially with the regulation of apprenticeship, with the journeymen's examination and with the founding and administering of all institutions for which the journeymen contribute, in which they have special interest, or which are designed to aid them. The guild statutes, in their detailed regulations, must provide that (1) in the discussion and final decision of the guild directorate at least one member of the journeymen's committee shall be admitted with full voting rights; (2) in the discussion and final decisions of the guild assembly all the members of the committee shall be admitted with full voting rights;³ and (3) in the administration of institutions of which journeymen, according to the president of the guild, make use, journeymen elected from their committee are to participate in equal numbers with the guild members.⁴

Guilds are allowed legal status and liability limited to their property.⁵ They may collect dues from their members, fees for institutions established by them, and fines; and these are collectible by force of law as any other just debt.⁶ The law further regulates the form of organization and mode of doing business, the organization of guild courts, and other matters, but allows, however, within the prescribed forms, considerable freedom of activity to the guilds.⁷

Under these laws guilds have been established in great numbers throughout Germany. Their effect has been to bring about some degree of cooperation of competitors in industry in common regulation of what most concerns them. Their influence on apprenticeship is highly beneficial, tending to replace neglect by care, exploitation by education. Acting under their permitted powers, the guilds have founded numerous industrial schools. Many of these have been taken over since by cities or other public authorities; many are controlled and supported partly by the guilds which founded them and partly by Government, while some are to-day wholly guild schools. In almost all trade schools, whether founded by guilds or

¹ R. G. O., sec. 95, pp. 295f.

² Ibid., sec. 28, p. 292.

³ Without which any decisions are void.

⁴ R. G. O., sec. 95, pp. 295f.

⁵ Ibid., sec. 95, p. 295.

⁶ Ibid., sec. 95, pp. 270f; sec. 95, pp. 271f.

⁷ Ibid., secs. 51-59, pp. 254-305.

not, and in many other industrial schools also, the guilds of the trades concerned are represented on the boards of trustees, furnish models, require their apprentices to attend, assist in conducting examinations and otherwise aid the schools.

A special type of guild may also be established under the national industrial law—the compulsory guilds (*Zwangsginnungen*). For the promotion of the common industrial interests of a handwork trade or of several such related trades, and on motion of the handworkers in the district, the authorities must require all those in the district engaged in the trade or trades concerned to join together to form a new compulsory guild. Several conditions, however, must first be fulfilled. The majority of those in the industry or trade and district who employ journeymen or apprentices must approve, the district must not be too large to permit the ready attendance of all members on guild gatherings, and the number of members must be enough to form an efficient guild. The initiative in the formation of a compulsory guild may come from a free guild (as all noncompulsory guilds may be called) of the industry concerned, or from individual handworkers.¹ An official ratifying vote of all the handworkers in the trade or trades and district concerned must be secured by the authorities. This vote is taken by mail, and a majority of those voting decide the question.²

On the formation of a compulsory guild, the (free) guilds which are organized for the same industry and district must dissolve. Guilds which include also other branches of industry continue in existence, but those of their members who are required to join the new compulsory guild must withdraw.³ The property of a guild dissolved as a result of the formation of a compulsory guild⁴ may go over with its liabilities (not to exceed the property) to the compulsory guild. Sick funds are normally to be transferred to the compulsory guild, and other benefit funds may be so transferred.⁵

The regulations for guilds in general apply also to compulsory guilds, with such modifications as the law specifically makes.⁶

All those who carry on independently in the district the trade or industry for which the compulsory guild is established are required to join. Exception is made of those who carry on the industry according to factory methods. The approval of the authorities is requisite for the accession of certain doubtful classes, as handworkers in agriculture or industry for pay who employ journeymen or apprentices and those engaged in house industries.⁷ In addition to those required to join, others are entitled to do so. Such are (1) those included in

¹ R. G. O., sec. 100, pp. 302f.

² Ibid., sec. 100a, p. 302f.

³ Ibid., sec. 100b, p. 303.

⁴ Ibid., sec. 100c, pp. 303-304.

⁵ Ibid., sec. 100f, pp. 306-10.

⁶ Ibid., sec. 100c, p. 304.

⁷ Ibid., sec. 100f, pp. 304f.

classes 1 to 3, inclusive (p. 56), as well as all handworkers engaged in agriculture or industry for pay and who employ neither journeymen nor apprentices; and (2) those who carry on the industry of the guild according to factory methods, if the guild assembly votes for them.¹ In cases of question concerning right or duty of membership, the legal authorities decide the matter.²

The special care given to apprenticeship regulation is shown by the enforcing of stricter requirements for eligibility to committees responsible for the execution of the regulations on apprenticeship than for eligibility to other committees or to the guild directorate. Journeymen also who are on these apprenticeship committees must meet higher tests than for membership on other committees.³ The detailed regulations of apprenticeship by the assembly of a compulsory guild requires the approval of the superior administrative authorities, whose decision must be preceded by a hearing of the chamber of industry of the district.⁴ This closer degree of supervision than is required for the regulations of free guilds is maintained because the regulations of compulsory guilds must be followed by all its members, whether required to join or not; and even handworkers who employ neither journeymen nor apprentices may, under certain conditions, be required to join. Thus all handworkers in the industry and district may be brought under the guild, and through them employees of all grades may be indirectly affected. To require all handworkers who employ neither journeymen nor apprentices to join the guild, the assembly must first vote for the proposal, a majority of those to be included must approve and the requirements as to the extent of the guild district must be met.⁵

Because of their compulsory nature, these guilds are not allowed to require a member to share in any benefit fund other than the guild sick fund. No cooperative business may be established by a compulsory guild, such as funds for loaning, cooperative purchase or sale bureaus, etc.⁶ Further, no compulsory guild may act in restraint of trade by limiting the prices its members may charge or the customers they accept.⁷ Guild contribution from members may by permission of the central authorities of the State be collected by addition to an industry tax, if such exist.⁸

A compulsory guild may be dissolved by order of the authorities, but only when three-fourths of the members vote in favor of the measure. A further check is put on dissolution by declaring the division of the guild property between the members to be illegal. Such property shall go to the guild welfare funds or to a new free

¹ R. G. O., sec. 100g, pp. 3072.

² Ibid., sec. 100h, p. 308.

³ Ibid., sec. 100i, p. 312.

⁴ Ibid., sec. 100j, p. 313.

⁵ Ibid., sec. 100k, pp. 317-318.

⁶ Ibid., sec. 100n, pp. 3112.

⁷ Ibid., 100q, p. 313.

⁸ Ibid., sec. 100r, pp. 3142.

guild for the same industry, or to the chamber of industry of the district, to be used for one of the objects stated just above.¹

Machinery by which neighboring guilds can cooperate is provided in the guild councils (Innungsausschüsse), which may be established for all or for several guilds standing under the same supervisory authority. Such councils concern themselves with the common interests of the participating guilds, which may delegate to them further rights and duties. The central government of each State may give to a guild council certain definite legal status, including limited liability (limited to its property). Guild councils are subject to the legal authorities much as are guilds.²

Guild associations (Innungsverbände), unlike guild councils, are formed only by guilds not under the same supervisory authorities. Their purpose is to advance their industry by assisting guilds, guild councils, chambers of industry, and authorities to carry out their legal duties. They are further authorized to regulate the furnishing of information about employment, and to found and support trade schools.³ An association may allow individual handworkers to join and represent their guild in the association.⁴

The associations are under the supervision of the superior administrative authorities in whose district their headquarters are.⁵ The association statutes must be approved by the authorities.⁶ They must furnish annually a list of the guilds which are members in the association.⁷ The association directors are authorized to present a report and proposals to the proper authorities and are obliged, on demand of these authorities, to give due attention to industrial questions.⁸ All assemblies of an association are to be held in its district, and may be forbidden or stopped if, by advance notice of the orders of the day or otherwise, there is evidence of purpose to exceed the legal sphere or powers of the association.⁹ An association may establish benefit funds for the members of the constituent guilds and their employees.¹⁰ The national senate (Bundesrat) may grant special legal status to any guild association, with limited liability (limited to its property).¹¹

Halfway between the official Government authorities and the primarily private guilds stand the semiofficial chambers of industry (Handwerkskammern), literally, chambers of handwork. Some of these bear the name of Gewerbekammer, but all are organized under the same law. These chambers are established by authorization of the State central authorities¹² to represent the interests of hand-

¹ R. G. O., sec. 100f, pp. 315ff.

² Ibid., secs. 101-102, pp. 318-320.

³ Ibid., sec. 104, pp. 330ff.

⁴ Ibid., sec. 104a, pp. 330ff.

⁵ Ibid., sec. 104k, pp. 331ff.

⁶ Ibid., sec. 104b, pp. 331ff.

⁷ Ibid., sec. 104b, pp. 331ff.

⁸ Ibid., sec. 104b, pp. 331ff.

⁹ Ibid., sec. 104c, pp. 340ff.

¹⁰ Ibid., sec. 104d, p. 340.

¹¹ Ibid., sec. 104i, pp. 342ff.

¹² Ibid., sec. 104g, pp. 341ff.

¹³ Or of several States, if the chamber overlap State boundary.

work. Branch chambers may be established, or divisions for groups of industries.¹ The district for one of these chambers is much larger than that typical of guilds. In 1910 there were about 71 chambers of industry in Germany.²

The chamber of industry is an elective body, elected (1) by the handworker guilds³ having headquarters in the district of the chamber, and from among their members, and (2) by the industrial societies (Gewerbevereine) and other societies which pursue the industrial interests of handwork, of whose membership at least one-half are handworkers who belong to no guild and reside in the district of the chamber.⁴

The requirements for eligibility to the chamber are rigid. Each member must be eligible to be a juror; must be 30 years old; must have carried on a handwork trade at least three years in the district of the chamber and be authorized to train apprentices.⁵ By high qualifications and long term of office, efficient service is secured from the members. The term of membership in the chamber and on its committees is six years, half of the members retiring every three years.⁶ The chamber may elect, according to its statutes, additional qualified members up to a fifth of its original number, and may invite qualified men with advisory power to its sessions. It may delegate regular or special duties to its committees.⁷

The special concerns of the chamber of industry are: (1) The detailed regulation of apprenticeship; (2) the supervision of the regulations concerning apprenticeship; (3) the aiding of the State and local authorities in the promotion of handwork by reports on questions important to handwork; (4) to debate motions and present conclusions and annual reports concerning handwork to the authorities; (5) to establish examining committees to manage the journeymen's examination; and (6) to form committees of appeal from the examining committees.⁸

The chamber has the right to be heard in all weighty matters concerning the common interests of handwork or any of its branches. It is further authorized to concern itself with institutions for the promotion of industrial, technical, and moral advancement of masters, journeymen, and apprentices, as well as to establish and support trade schools.

¹ R. G. O., sec. 103, pp. 321ff.

² Coelach, pp. 42, 128.

³ Handworker guilds are all guilds the majority of whose members are handworkers. R. G. O., sec. 118, pp. 606ff.

⁴ R. G. O., secs. 103a, and 118, p. 606ff.

⁵ Ibid., sec. 103b, pp. 323ff.

⁶ Ibid., 103c, p. 324.

⁷ Ibid., 103d, p. 324.

⁸ Ibid., 103e, pp. 325ff.

The guilds and guild councils are obliged to follow the orders issued by the chambers of industry which cover their district and which are within its powers. All statutes and regulations of the guilds and guild councils which conflict with the regulations of the chamber of industry in authority are invalid.¹ The costs of the establishment and activities of the chamber of industry are, in Prussia, to be paid by the handworkers of the district and collected like a tax.² In Prussia, also, the permanent officials of the chambers have the rights and duties of State officers and take oath as they do.³

Factory industries are normally regulated by the semiofficial chambers of commerce, which hold for commerce, including factory industries, a position similar to that of the chambers of industry in handwork. However, these chambers of commerce are much less interested and much less zealous in the regulation of factory industries than their fellows in handwork. They commonly neglect this regulation, largely or wholly. Especially is this evident relative to the highly important conditions of apprentices and youthful workers in factories and to industrial education. In consequence of this neglect, some chambers of industry have stepped into the breach and themselves regulate apprenticeship in factories.⁴

¹ R. G. O., sec. 103ff. p. 327.

² Ibid., sec. 122, pp. 609ff.

³ Ibid., sec. 120, p. 608.

⁴ Thus the Dusseldorf Handwerkskammer, the second largest in Germany, with several branches, regulates apprentices in factories. Data obtained from interviews with directors of Handwerkskammern in Dusseldorf and Aachen.

CHAPTER VII.

APPRENTICESHIP.

We have seen how in the United States apprenticeship has declined, and how throughout its recent history the prevailing attitude toward it has been that of *laissez faire*. The natural result of such an attitude and course of action has been inadequate preparation and overspecialization of the boy seeking to learn a trade, and his frequent exploitation as a mere youthful worker. In a strong contrast with American practice concerning apprenticeship is that of Germany. Conserving all that was possible of the virtues of the old-time apprenticeship, she has added new virtues to the system, minimized the former evils, and with the most deliberate care sought to improve the conditions of entrance upon and preparation for the trades. Efficiency, as always in modern times, has been her watchword, and regulation her means. So we find a well-developed legal system of regulation, which to strongly individualistic minds involves over-regulation. Whether it be so, or whether the system of *laissez faire* in vogue in our own country be better, we shall seek to determine from the data here presented.

What do the Germans understand by the term *Lehrling* (apprentice)? The most exact answers are to be found in the National Industrial Law and in certain court decisions. They agree in regarding the apprentice as a young person who is engaged in an industry chiefly for the purpose of learning the industry or a part of it.¹ The chief criterion of the industrial law as to whether a given individual is an apprentice or not is whether he is learning the trade or not.² An apprentice is thus to be clearly distinguished from a youthful worker who is not an apprentice, for the latter even though working in the same shop or even side by side with the apprentice is not necessarily taught the trade and is protected by none of the regulations which safeguard the apprentice. Apprenticeship is the usual mode of entrance to a handwork trade; but factory industries are entered by boys either as apprentices or as youthful workers (called, to distinguish them from apprentices, unskilled workers—*ungelehrte Arbeiter*).

The purpose of apprenticeship is primarily the efficient training of the apprentice, and this is regarded as of the utmost importance to his individual well-being in his trade and out, and of the greatest civic importance, for the efficiency and general development of whole

¹ *Coelach*, pp. 32-33.

² *Bitens*, in *Coelach*, p. 33.

social classes of the citizens depend largely or chiefly on the proper training of apprentices.

I can not leave the matter even thus, for investigation in Germany leads me to conclude that the core of the industrial education situation there is not the industrial schools, but the system of apprenticeship.¹ For by far the larger part of the training of the great majority of apprentices still takes place, not in the school, but in the workshop. The extraordinary growth of industrial schools in Germany during the last few decades should not blind us to this fact. Indeed the system of industrial schools, so far as that is made up by the compulsory improvement schools, is in a sense but a part of the apprenticeship system, though the compulsory attendance on these schools applies also to unskilled, youthful workers as well as to apprentices. Hour for hour, the industrial schools probably leave a deeper impress on the apprentices and other students attending them than do the shops; but we must not forget that the shops have the apprentices an average of perhaps 56 hours a week and the schools but 4 to 8.

Some of the provisions of the National Industrial Law on apprenticeship are applicable to factories and handwork industries alike; while others apply only to handwork, which is thus more closely regulated.² The ordinary provisions concerning apprentice contract, etc., do not apply to apprentices in teaching workshops (Lehrwerkstätten) recognized by the State nor to the apprenticeship of a son to his father.³ The first of these exceptions is probably desirable where the workshop in question is the actual substitute for that of the master, but not, as in Baden and Wurttemberg, for regular shops merely supervised by the State.⁴ In case a son be apprenticed to his father the above exception applies only if the chamber of industry be informed in writing of the existence of the apprenticeship, the trade, day of its beginning, and its duration. This provision applies to all apprentices, handworkers, and others; who are under the supervision of a chamber of industry. This is for the purpose of protecting the apprentice in certain exigencies, but is not intended to replace the paternal relation by a legal one.⁵

The right to have apprentices is very carefully limited. No one not a citizen is allowed the right.⁶ Grave and repeated offenses against

¹ Prof. Charles McCarthy did not realize the vitality of apprenticeship in Germany to-day when he made the following statement: "The Germans have studied out a plan for replacing the apprenticeship system, now worn out because of the growth of the modern factory system and the minute division of labor entailed by this system. . . . The Germans taking the remnants of the apprenticeship system, which of course still exists here and there, have added to it the continuation school." (Italics mine.) Report of Wisconsin Commission on Industrial and Agricultural Training, 1911, p. 20.

² Statements below concerning the law of apprenticeship apply to all apprentices unless otherwise stated.

³ R. G. O., sec. 126b, p. 4072.

⁴ Coesche, p. 68.

⁵ R. G. O., sec. 126b, pp. 4072 and Coesche, pp. 68, 70.

⁶ R. G. O., sec. 126, p. 4071.

apprentices or unfitness (bodily or mental) to train them permit the temporary or permanent withdrawal of the right.¹ These regulations cover all industry. In handwork, in addition, all who train (i. e., supervise and instruct) apprentices must be at least 24 years old and must have passed their master's examination (and thus have the title of master). If such a person does not have the title of master in the industry or branch in which he wishes to train apprentices, he may be permitted to do so if he has fulfilled the required time of apprenticeship and passed the journeyman's examination in that branch of industry or if he has for five years carried on independently the handwork concerned or been for an equal period engaged in the work as foreman or in a similar position.² The higher administrative authorities may confer the right to train apprentices on others than those who fulfill the above conditions after the chamber of industry and any guild for the industry and district have been heard. Exception is further made from the requirement of the master's title for a period not to exceed one year in the case of the death of the employer, in order that the apprentices may continue in the establishment.³ Journeymen are permitted to instruct apprentices in single technical manipulations. Apprenticeship in a handwork trade may be carried to completion in a factory if supplementary training be secured in a teaching workshop supported or recognized by the State or by other institution for industrial education. Before recognition of other institutions for the purpose the chamber of industry of the district must be given ample opportunity to present its views.⁴

One who meets the full requirements qualifying him to train apprentices in one branch of industry may train them also in other branches of the same industry. One qualified in one industry may train apprentices also in related industries. The local chamber of industry decides as to what industries are to be considered as related.⁵ The criteria on which these decisions are based are primarily either similarity of technique (as textile industries), or of the raw materials (as metal industries), dependence of one industry upon another for its raw materials, cooperation of several industries to produce the same product (as the building trades), or relations of the products in use (as food products).⁶ The differing histories of industry in different localities have resulted in different decisions as to what are related industries.⁶

Throughout Germany children must attend the common school (Volksschule) unless permitted to attend some other school, until

¹ R. G. O., sec. 120a, pp. 406, 407.

² R. G. O., sec. 120, pp. 418ff. This provision has caused the transition to the present law, especially for old handworkers without the title of master. Cf. Coelach, p. 28.

³ R. G. O., sec. 120, pp. 418ff.

⁴ R. G. O., sec. 120, pp. 418ff.

⁵ R. G. O., sec. 120a, p. 422.

⁶ Coelach, pp. 3, 21.

they are 14 years old.¹ The great majority leave school then, and the boys (with whom we shall be mainly concerned) go to work under an employer. They must do this in most cases to supplement the meager family income. They may go into agriculture, commerce, or industry. Those who choose industry have before them the alternatives of skilled or unskilled work. Those whose families are not well enough off to forego the somewhat larger immediate wage, or who have less foresight, enter the ranks of the unskilled either as youthful workers (ungelernte Arbeiter) or as errand boys and the like (Laufburschen). They will receive as wage, on the average, 8 to 10 marks (\$1.92 to \$2.40) a week the first year, rising in about four years to their maximum of 15 to 18, or even 20, marks (\$3.60 to \$4.32, or \$4.80).²

The employers do not want the boys as apprentices so young as 14 years of age, and do not regard them as very useful for the first year or so. But the boys' need is pressing; they must have work, and the employers are constrained to take them. As a result, they are set at odd jobs for the first period of their apprenticeship. An apprentice will be paid 2.5 marks (60 cents) a week for the first year, on the average, 3 to 4 marks (72 to 96 cents) the second, 4 to 5 (96 cents to \$1.20) the third, and 5 to 6 (\$1.20 to \$1.44) the fourth year, if the apprenticeship lasts so long.³ Handwork apprentices sometimes receive board and room and a trifle of pocket money in lieu of wage.⁴ Those parents who can do a little better by their boys keep them longer in school (Gymnasium or Realschule, rather than a trade school usually), if possible, until they have won the coveted one-year military service certificate, which would normally keep them in school until they are 16 years at least.⁵ Such boys, not many in number, begin their apprenticeship at about 16 years, and ordinarily learn faster, probably because of greater maturity and habits of application, than most of those who entered the same industries at 14 years of age.

The factories, like most in the United States, do not desire many, if any, apprentices; though they call for many unskilled workers, both youthful and mature. Such workers, other than apprentices, need not be given any instruction in the factory.⁶ Apprenticeship in factories differs from that in handwork in that the legal regulations are less rigid, the supervision of these regulations (nominally by the chambers of commerce, but often actually by the chambers of industry⁷) is less complete, the tendency to specialization is more marked, and in consequence the chances of the apprentice for a well-rounded

¹ With few exceptions.

² Herr Schulinspektor August Kasten, Hamburg.

³ Dr. Rudolph Gernandt, a director of Hamburg Gewerkekammer.

⁴ Cf. ch. 5, p. 51, note 1.

⁵ Herr Direktor Jung, Gewerbliche Fortbildungsschule, Bremen.

⁶ Cf. ch. 5, p. 52.

grasp of his trade are ordinarily poorer than in handwork, and his resulting need of supplementary training in industrial school is greater. Most apprentices, however, learn a handwork trade.

As the boy seeks to choose his trade, guided by the relative opportunities and his own leanings, he finds the guilds, chambers of industry, and other industrial bodies ready to help him in the choice. The way in which the advice is given and the boy aided to secure a place varies from place to place. Special bureaus in some localities advise him, booklets about the trades furnish him data on which to decide, and employment bureaus, public and private, help him to secure a position.¹ The machinery of vocational guidance, so new in our own country,² has been for a long time in operation among guilds and other industrial associations of Germany. Even there, however, the machinery is not fully developed, is not everywhere active, and many boys drift or fall into their occupations, instead of making a rational choice, based on knowledge of the significant facts.

It has long been customary for apprenticeships to be begun by a period of probation, and the national industrial law has since 1897 required such a period. By it either party is given the right to withdraw within four weeks unless a longer period, not to exceed three months, has been agreed upon.³ This right of withdrawal can not be waived.⁴ Originally the probationary period was desired to prevent thoughtless entering on apprenticeships,⁵ but now it is intended to show both parties whether they can probably bring the apprenticeship to a successful conclusion, and whether the work be suited to the ability and strength of the boy.⁶

The repeal of the older medieval apprentice regulations resulted in the neglect of the apprentice, morally and physically, shown by insubordination, breach of contract, and inefficiency.⁷ For several decades compulsory written contracts were popularly demanded, chiefly on the grounds that such contracts would limit the utilization of minors by their parents, protect apprentices from exploitation as youthful workers, and employers from breach of contract, and generally increase the feeling of responsibility and improve the regulation of apprenticeship. Since 1893, such contracts have been required by the National Industrial Law.⁸ The apprentice contract must be executed in writing within four weeks of the beginning of the

¹ Cf. list of booklets on vocational guidance, in References, p. 151.

² Pioneered by the Vocational Bureau, Boston, recently founded, whose activities are wide and expanding, and example illuminating.

³ R. G. O., sec. 137b, pp. 412, 413.

⁴ Coelach, p. 91.

⁵ *Erhebungen des Reichsanerkennungsamtes über die Verhältnisse der Lehrlinge usw. 1876*, quoted in Coelach, p. 89.

⁶ Coelach, p. 88, 89.

⁷ *Ibid.*, p. 80.

⁸ *Ibid.*, p. 83.

apprenticeship and must contain certain provisions.¹ If no written contract be executed, or if the execution be delayed (classed as a "continuous offense"—Dauerdelikt), or if some of the provisions be omitted, the contract is still valid,² but the employer is punishable for each offense by fine of not over 20 marks (\$4.80) or imprisonment of not over three days.³ But not even in law-abiding Germany, and with such a law, do we find all apprenticeships have a written contract. In handwork they are nigh universal and in the larger factories usual, but in the smaller factories they are generally or often absent.⁴ The carelessness and ignorance of the children and their parents (chiefly the latter) in some districts are largely responsible for the lack of more contracts. Such parents wish to receive as much money as possible from their children's work, and so wish to have them free to change to whichever factory offers the largest reward for the time being. This breaks up the continuity of their instruction and is bad for them.⁵

The required provisions in the apprentice contract are statements of—(1) the industry or branch; (2) the length of the apprenticeship; (3) the mutual services required; and (4) the legal and other conditions under which one party may withdraw from the contract.⁶ Under the mutual service (3) are to be specified the money paid to the master, if any (for board and lodging, unless otherwise stated), wages, board and lodging, furnishing of tools, washing, etc.⁷ The contract must be signed by the employer or his responsible representative, by the apprentice, and by the latter's legal representative.⁸ Absence of one of these signatures makes any claim based on the contract invalid.⁹ The legal representative of the apprentice is liable for the fulfillment of the contract only if so specified, and then only to the extent of his authority over the boy.¹⁰ One copy of the contract is to be furnished him. The employer, to make possible public supervision of the apprentice contracts, must turn over the contracts to the local police authorities on demand.¹¹ If the employer be a handworker and guild member, he must furnish a copy of the contract to his guild in lieu of the police, within 14 days after execution. The guild may require that the contract be executed before it. In this case the guild must furnish a copy of the contract to the master and another to the father or guardian of the apprentice.¹²

With handworkers, then, the guild supervises the apprentice contract in place of the police. The chambers of industry, however,

¹ R. G. O., sec. 126b, pp. 407ff.

² Schöcker, Reger, Landmann-Rohmer; in Coelsch, p. 54.

³ R. G. O., sec. 126, p. 503ff.

⁴ Herr Direktor Jung, Barmen.

⁵ R. G. O., sec. 126, pp. 407ff.

⁶ Schöcker, in Coelsch, pp. 62, 63.

⁷ R. G. O., sec. 126b, pp. 407ff.

⁸ Landmann-Rohmer and Nelken, in Coelsch, p. 65.

⁹ R. G. O., sec. 126b, pp. 407ff.

¹⁰ Ibid., 126b, p. 423.

may¹ regulate the guilds in this supervision, and all of them have done so.² Those masters under a chamber of industry must make all their apprentice contracts according to specified normal forms and are subject further to the orders for the regulation of apprenticeship (Vorschriften zur Regelung des Lehrlingswesens) of the chamber.³ The apprentice contracts of the Prussian chambers of industry are all of about the same form, based on the recommendation of the minister of commerce. Those of other States vary more or less from these. The Prussian contracts require compulsory sick insurance of the apprentice, provision of enough time for the apprentice to make his journeyman's piece, and specifications as to who is to furnish the materials for and who is finally to own the piece.⁴ The Prussian and most other chambers of industry forbid the employers to take apprentices whose lack of school knowledge or bodily or mental defects unfit them for the apprenticeship in question.⁵ The Prussian and Baden chambers require the discharge of apprentices in case of their obstinate failure to attend the required school.⁶

The apprentice may take up his residence with his employer, if they so agree, though this is not done so much as in former days. In case of such residence, only such housework may be required of the apprentice as does not interfere with his training. If he receive neither board nor lodging from his employer, he may not be required to do any household work.⁷ This provision was new in 1897 and shows a development of public opinion since the law of 1878, which approved of such work.⁸ The financial relations of the employer and apprentice vary. Sometimes the apprentice pays the employer a sum (Lehrgeld), usually for board and lodging. Probably in the majority of cases the employer pays the apprentice, but only a small sum (cf. p. 67 above). Coelsch states that where the apprentice is paid a wage it is usually to stimulate his activity.⁹ The tendency is for board and lodging to be furnished less often than in former days and a wage to be more often paid.

On entering the apprenticeship relation, employer and apprentice thereby assume certain legal duties and liabilities. The employer is, according to the law of 1869,¹⁰ to make it his business, by teaching and practice, to train the apprentice to become a skilled journeyman. The employer must instruct the apprentice in all the work occurring in his business (which may be wide or narrow, according to how specialized his business is).¹¹ This does not require training in more than the trade or branch of industry specified in the apprentice contract, but it is a legal safeguard against overspecialization. Further,

¹ According to R. G. O., sec. 103c (cf. p. 63, ch. 6).

² Coelsch, pp. 62, 67.

³ Ibid., p. 53.

⁴ Ibid., p. 54.

⁵ R. G. O., sec. 127, pp. 410f.

Coelsch, p. 77.

⁷ Ibid., p. 97.

⁸ 1890, R. G. O., sec. 112. cf. Coelsch, p. 71.

⁹ R. G. O., sec. 127, pp. 410, 411.

it includes practical training only, and not theoretical.¹ The employer must allow time for his apprentices under 18 to attend a school recognized by the authorities as an improvement school (see further chap. 8, p. 81).² He must train the apprentice himself or through a qualified specially appointed representative.³ No exceptions to this rule are allowed. It is not sufficient to assign an apprentice to a journeyman without specific instructions to the latter to instruct him. The journeyman must also have certain qualifications.⁴ The employer must watch over the conduct and morals of his apprentices both in and out of his working hours.⁵ In factories and large hand work shops, supervision away from work has been found impossible.⁶ Employers in such establishments have the recourse of discharge of an apprentice who commits certain offenses.⁷ The employer must protect his apprentice from abuse by other workers, and must give him only tasks suited to his strength.⁸ He must allow the apprentice sufficient time and opportunity to attend religious service on Sundays and holidays.⁹ The employer is liable for neglect of his legal duties to his apprentice to a fine of not over 150 marks or imprisonment for not over four weeks.¹⁰

The apprentice, for his part, is, according to the law, thrown under the fatherly authority of his employer and of those appointed to instruct him, and obliged to obedience and truth, industry, and probity.¹¹ This provision includes the right of bodily punishment by the employer or his responsible representative, but not by the teaching representative.¹² Irregular or improper punishment or that dangerous to health is forbidden.¹³ Those apprentices whose employers stand under chambers of industry must also follow their regulations, which include in all cases the obligation to obey all the proper orders of the employer or his legal representative and to obey all the shop regulations of the employer.¹⁴ The apprentice may be required to do other mechanical work than that in his trade; for judicial decisions have concluded that his whole working power is at the command of his master, though the fact that the chief purpose of the apprenticeship is training must be respected.¹⁵ The apprentice of an employer

¹ Coelsch, p. 73.

² R. G. O., sec. 120, pp. 380-384.

³ R. G. O., sec. 127, pp. 410, 411.

⁴ Coelsch, p. 74.

⁵ R. G. O., sec. 127, pp. 410-411.

⁶ Urtell. R. G., in Coelsch, p. 74a.

⁷ Ibid., pp. 74-75.

⁸ R. G. O., sec. 127b, pp. 412ff.

⁹ R. G. O., sec. 127, pp. 410-411. Other duties of the employer are to be found elsewhere in this chapter.

¹⁰ R. G. O., secs. 148-9, pp. 490ff.

¹¹ R. G. O., sec. 127a, pp. 411-12.

¹² Coelsch, p. 85; and Nolken and Schloker, in Coelsch, p. 86.

¹³ R. G. O., sec. 127a, pp. 411-12.

¹⁴ Coelsch, p. 86.

¹⁵ Reger, in Coelsch, pp. 76, 78.

under a chamber of industry must care for tools intrusted to him.¹ His father or guardian is liable for the obedience, diligence, and punctual school attendance of the apprentice, but this liability amounts to little unless the father or guardian obligates himself in the apprentice contract to indemnify the master for any such mistake on the part of the apprentice.²

Certain circumstances permit the withdrawal from the apprenticeship of one of the parties after the probation period and before the apprenticeship is completed. The employer may discharge his apprentice if (1) the latter has deceived him materially on signing the contract; (2) if he has thieved, lived dissolutely, etc.; (3) if he has left his work when unauthorized to do so or constantly refused to do his duty; (4) if despite warning he is careless about fire; (5) if he commits grave offenses against his employer or others in his business or family; (6) if he intentionally harms the goods of his employer or fellow workers; (7) if he treats the families of his employer or fellows immorally; or (8) if he is unable to continue his work or has a loathsome disease.^{3,4} The apprentice may further be discharged if he repeatedly neglects his duties as specified by law,⁵ or he neglects the attendance on trade or improvement school.⁶ The chambers of industry of Prussia and some others require those employers under their authority to discharge apprentices for bodily or mental defects or lack of skill or school training.⁷

The apprentice may withdraw if (1) his employer becomes unable to continue his work; (2) if the employer or members of his family abuse or act immorally toward the apprentice or his family; (3) if the employer does not pay the agreed wage, or furnish sufficient work, if piece wage be paid, or makes excessive gains from the apprentice; or (4) if the continuation of the work would be dangerous to the life or health of the apprentice, which fact was not known to him when the apprenticeship began. The apprentice may further withdraw if the master neglect in a dangerous way his duties to the apprentice relative to health, morals or training, or misuse his power of fatherly discipline, or becomes unable to carry out his contractual obligations.⁸ If the master die and the business be continued, the apprentice may withdraw if he does so within four weeks.⁹

Neither party to the contract may waive any of the above legal grounds for permitted withdrawal, but they may, says Coelsch, specify additional ones.¹⁰ The apprentice must be released by his

¹ Coelsch, p. 87.

² Ibid., p. 87.

³ R. G. O., sec. 137b, pp. 412f.

⁴ Ibid., sec. 123, pp. 397f.

⁵ Ibid., sec. 127a, pp. 411-412.

⁶ Coelsch, p. 88.

⁷ R. G. O., sec. 137b, pp. 412f.

⁸ Ibid., sec. 124, pp. 400f.

⁹ Coelsch, p. 88. Coelsch's view is disputed by several authorities, quoted on the same page.

employer within four weeks after his legal representative (or himself, if he be of age) has given written notice to his employer of intention to change his trade. The employer shall in such case note the reason for leaving in the apprentice's work book (*Arbeitsbuch*); and the apprentice shall be prevented from working at the abandoned trade under another master within nine months, except with the approval of his former employer,¹ or from working as a youthful worker (not apprentice) for the same period.²

The earlier industrial law (as that of 1869) allowed rather easy change of trade, and thus withdrawal by apprentices, and many withdrew in their second or third year. The Society for Social Politics (*Verein für Sozialpolitik*) declared in 1875, after investigation, that because of such breach of contract poorer preparation of apprentices resulted, for the employers must utilize their working powers early, lest they leave and the employers lose thereby. Payment of apprentices was one cause of such breach; for this parents were at fault, considering wage more than preparation; and employers, for seeking to secure discipline by payment of wage.³ Apprentices were best held by payment of a wage and holding a part until the apprenticeship was completed.⁴ In 1878 the law required compulsory return of runaway apprentices.⁵ The law now provides that if an apprentice leaves his employer without legal cause, the latter may only demand his return if the contract be in writing. The police authorities can, at their option, require the apprentice to return to his master if the latter complain within a week, except when a judge decides otherwise. Force, fine (up to 50 marks), or imprisonment up to five days may be used by the police to enforce return.⁶ A number of safeguards are thrown around this procedure, to protect the apprentice from abuse—the prompt complaint required from the employer, the option of the police, and the possible interference by a court.

In case the apprenticeship terminates prematurely, damages may be collected only if the contract be written. In certain cases, to be valid, the sort and amount of damages must be specified in the contract.⁷ If the apprentice leave the apprenticeship illegally, the damages shall, except as a lesser amount, be agreed upon, amount to not over half the customary wage of journeymen in the industry of the employer for the time omitted, but not for over six months. The father of the apprentice is liable, so far as he has the care of the boy, for his breach of contract, as is also any employer who induced him to

¹ R. G. O., sec. 127c, p. 415.

² Landmann-Rohmer, Schickler, Rohrscheidt, and Nellen, in Coelsch, p. 102.

³ *Schriften des Verein für Sozialpolitik*, in Coelsch, p. 103.

⁴ *Erhebungen*, 1875, a. a. O. B., in Coelsch, p. 104.

⁵ Coelsch, p. 105.

⁶ R. G. O., sec. 127d, pp. 413ff.

⁷ *Ibid.*, sec. 137i, pp. 415-416.

leave his apprenticeship or who gave him work, whether cognizant of the breach of contract or not.¹ Some chambers of industry specify damages for breach of contract in their required normal contracts, but most merely note that agreement on damages is necessary.²

There is no limitation to the length of apprenticeship in factories. In handwork apprenticeship must last usually three and not to exceed four years. Within the limit the length may be set by the chambers of industry with the approval of the higher administrative authorities for single industries or branches, and after the guilds and industrial societies concerned have had a hearing. The chambers of industry are further authorized to release apprentices in individual cases from the restrictions of the established period.³ They may make the period dependent on individual efficiency or on attendance at a trade or improvement school.⁴ Almost all chambers of industry make regulations concerning the period of apprenticeship.⁵ Between the different chambers the regulations differ considerably. Of 68 chambers answering an inquiry of Coelsch, 9 made no regulations, 37 set the minimum at three and the maximum at four years, while 15 required three years uniformly.⁶ The regulations seem to make the period too uniform, as between the several trades; and the chambers do not provide sufficiently for individual exceptions, the latter largely to avoid disputes with employers.⁷ Coelsch thinks that the period averages too long, on the whole, and regards three to four years for the difficult, and two to four for the easier trades as desirable.⁸ Where the chambers of industry do not regulate, the matter the guilds, free or compulsory, may do so with certain limitations.⁹

At the close of the period of apprenticeship the employer must furnish to the apprentice a certificate (Lehrzeugnis) stating the trade, length of the apprenticeship, the proficiency reached in knowledge and ability, and the conduct of the apprentice.¹⁰ This is to be given whether the apprentice has done well or not, if he complete the apprenticeship, and whether he wishes it or not.¹¹ The local authorities are to freely certify to the certificate (merely attesting the employer's signature¹²). Where guilds or other representatives of employers exist, their apprentice letters (Lehrbriefe) take the place of the employer's certificates.¹³

Toward and at the close of his apprenticeship the apprentice, if he be in handwork, must be given opportunity by his employer to take the journeyman's examination (Gesellenprüfung).¹⁴ This includes the making of a journeyman's piece. The law requires the handwork

¹ R. G. O., sec. 127g, pp. 416-417.

² Coelsch, p. 112.

³ R. G. O., sec. 130a, pp. 422-424.

⁴ Coelsch, p. 57.

⁵ Ibid., p. 57.

⁶ Coelsch, pp. 57, 58.

⁷ Ibid., pp. 58, 59.

⁸ Ibid., pp. 60-62.

⁹ Ibid., p. 62; R. G. O., sec. 81a, 3, p. 264.

¹⁰ R. G. O., sec. 127c, p. 413.

¹¹ Coelsch, p. 81.

¹² Ibid., p. 80.

¹³ R. G. O., sec. 127c, p. 413.

¹⁴ R. G. O., sec. 131a, pp. 424-425.

apprentice to take this examination and his employer and master to hold him to it.¹ The chambers of industry in some regions, notably in Prussia and Bavaria, reiterate and try to enforce this requirement.² To have passed the examination involves advancement to the journeyman.³ But as a matter of fact many handwork apprentices never take the examination, and though the chambers of industry would like to force them to do so, the existing law is in this respect too weak for the purpose. Factory apprentices need not take the examination, and very few do so. The celebrated Krupp Steel Works in Essen seek to have their apprentices take the examination, which they conduct themselves, for the sake of indicating the degrees of individual progress made, but they do not require this, nor advance the journeyman any the less if he omit it.⁴ The State central authorities can require the journeyman's examination to be passed by all who receive certificates from teaching workshops, institutions for industrial education, or examination authorities whose certificate qualifies for Government service.⁵

An examination committee is to be established for every compulsory guild, but for free guilds only when a chamber of industry empowers them to hold examinations. So far as examinations in individual industries are not provided by guilds, institutions of instruction, or examining authorities, the chamber of industry shall arrange such examinations. The examining committee consists of a chairman, chosen by the chamber of industry, and at least two assistants, chosen as a rule for three years, and of whom one-half must be journeymen who have passed the examination.⁶ The examination must show that the apprentice is able to command in his industry the necessary dexterity and ability with sufficient certainty, and also that he is informed concerning the value, preservation, and handling of the raw materials to be worked with, and the recognition of their good and bad qualities. The procedure of the examination is determined by the superior administrative authorities with the agreement of the chamber of industry. Bookkeeping may be required, in addition to the above-stated subjects.⁷ For admission to the examination the apprentice must furnish his certificate of apprenticeship, and the certificate of attendance on an improvement or trade school, if such attendance was required of him. The examining committee note the passing of the examination on the apprenticeship certificate or apprenticeship letter.⁸ Its chairman may appeal from the committee's decision to the chamber of industry.⁹ The State central authorities may amend these regulations for the journeyman's examination, but may not lessen the requirements for passing it, as stated above.¹⁰

¹ R. G. O., sec. 181a, pp. 427-428.

² Coelach, pp. 229-230.

³ Dr. Schoppacher Handwerkskammer Sekretär, Düsseldorf.

⁴ An engineer of Fried. Krupp A. G.

⁵ R. G. O., sec. 181, pp. 424-425.

⁶ Ibid., sec. 181a, p. 428.

⁷ Ibid., sec. 181b, pp. 428-427.

⁸ Ibid., sec. 181c, pp. 427-428.

⁹ Ibid., sec. 182, p. 429.

¹⁰ Ibid., sec. 183, p. 430.

If an apprentice fail to pass the journeyman's examination, and the examining committee regard this as the fault of his employer, the apprentice may receive supplementary training from another employer, and the former employer be required to pay for his pecuniary loss.¹

By national law (not industrial law) all those who pass a specified examination in any branch of handwork may obtain the one-year volunteer military certificate. This examination is chiefly theoretical and is so hard that a young man passing it at, for example, 18 years of age, must be as able as any master workman.² Naturally, but few take this examination.

If too many apprentices are held by an employer, so that their training is endangered, the lower administrative authorities may compel the dismissal of some, and limit the taking on of more than a certain number.³ The dismissed apprentices, if their contracts be written, may demand an apprentice certificate and damages from their employer. The national senate (Bundesrat) may further regulate the maximum number of apprentices that may be held in establishments in a certain branch of industry. If such regulations are not made by the Bundesrath, they may be made by the several State central authorities. So far as these authorities have not legislated on the subject, the chambers of industry and guilds may, for those only who are under their charge (i. e., only handworkers, ordinarily), regulate the number of apprentices permitted.⁴ In 1904, seven years after these provisions became law, neither the Bundesrat nor any State central authorities had made use of this regulative power.⁵ Most of the chambers of industry have done so, however, some regulating all industries alike, and some making special regulations for special trades.⁶ Many of these regulations seem too general and unsuited to varying conditions in different industries and with different employers.⁷ How they have worked out in practice it is yet too soon to judge.⁸ Few employers' associations or trades unions have sought to regulate the maximum number of apprentices in their trades.⁹ In but few individual cases and in but few trades is there any excess of apprentices beyond what is desirable. The chamber of industry reports show a lack of journeymen and apprentices in the country and smaller cities, and the employment offices show a great lack of apprentices. So the attempts of the chambers of industry at regulation of the maximum number of apprentices seem to be on the whole not greatly needed.¹⁰

¹ Handwerkskammer, Mannheim.

² Gustav Koeppe, Sekretär, Handwerkskammer, Coblenz.

³ R. G. O., sec. 126, pp. 417-418.

⁴ Ibid., sec. 120, p. 423.

⁵ Erhebungen v. R. G. O. S., in Coelsch, p. 112.

⁶ Coelsch, pp. 128-130.

⁷ Ibid., pp. 114, 127.

⁸ Ibid., p. 130.

⁹ Ibid., pp. 124-126.

¹⁰ Ibid., pp. 128, 129, 132.

CHAPTER VIII.

THE SYSTEM OF INDUSTRIAL SCHOOLS.

German industrial schools took their rise in the Sunday afternoon and evening schools which had existed for several centuries in some parts of the country, dating back in one Baltic district as early as 1569.¹ They were used to supplement the imperfect general education of the working boys and girls. Attendance was made compulsory up to the age of 18 or even until marriage, but this provision was not enforced. The Sunday afternoon schools were at first chiefly concerned with religious teaching, but later they became general continuation schools,² concerned merely to reiterate the lessons taught in the common schools, with perhaps some slight advance. Still later more and more industrial and commercial training crept in, as also into the evening schools. The schools in their early days were far from successful on account of the lack of rooms in which to meet and of equipment, the ill-assorted nature of the pupils, and incompetency of the teachers. The industrializing of many of these schools improved matters somewhat, but the fact that throughout almost all Germany to-day strong attempts are being made to abolish evening and Sunday instruction in favor of day instruction, even for apprentices at work, indicates that the drawbacks were serious. Many of the Sunday schools gradually differentiated themselves into drawing, trade, commercial, mechanical, and art schools.³

In Prussia the medieval restrictions on trade and industry were abolished and industrial freedom (*Gewerbefreiheit*) attained in 1810, almost half a century previous to the change in the other German States.⁴ Apprenticeship declined under industrial freedom and extensive competition, and the need of supplementary means of training was felt. Industrial improvement schools⁵ were established, meeting evenings and Sundays at first, and these struggled on until the industrial law of the North German Union in 1869 gave localities the right to require compulsory attendance of all male workmen under 18 years of age.⁶ In 1874 the final factor of success was added in annual Prussian appropriations and an official statement of principles for the conduct of such schools.

¹ Sadler, M. E., editor: *Continuation schools in England and Elsewhere*. Manchester, 1907, ch. 8, p. 520.

² See preface.

³ Spec. com. rep., vol. 33, p. 12.

⁴ English Bd. of Educ. Educational Pamphlet No. 18. *Compulsory Continuation Schools in Germany* 1910, preface.

⁵ Eng. Bd. Educ. Educ. Pamph. 18, preface, p. 1.

The States of central and south Germany, after the establishment of the German nation, felt the need of better cultural and civic training for their masses. They accordingly established general improvement schools, whose sessions were at first on Sunday and in the evenings.¹ Bavaria had had improvement schools with compulsory attendance for both boys and girls since 1803. The new schools did not succeed very well until the curricula were remodeled to center around the vocations of the pupils,² and the schools thus became primarily industrial schools. They have remained, however, more cultural and less technical than the Prussian schools.

From the early general Sunday and evening schools, and the industrial Sunday and evening schools which became differentiated from them, or were established in the light of their example, arose during the nineteenth century a great variety of industrial schools ranging from the improvement schools for youthful workers to the highly advanced and scientific technical high schools (Technische Hochschulen).³ The majority of these industrial schools were established by private individuals, guilds, trade-unions, merchants' associations, and towns.⁴ This fact, and the loosely united condition of the German States during most of this development, resulted in great diversity in the types of schools and much wasted effort. The nineteenth century was preeminently the period of experimentation in industrial schools. After the German nation was founded these schools, stimulated by the remarkable industrial and commercial development, went forward with leaps and bounds. But they are still essentially local in their control and support, and there is not as yet a unified system under central control.⁵ Indeed, any system of industrial schools can be spoken of, as in the title of this chapter, only in the most general way, and for lack of a better term to indicate their general features and relations. So far as unity exists, it is due chiefly to the action of the National and of the State Governments, and to the forces of example and imitation, these latter working largely through the association of the German industrial school men (Verband deutscher Gewerbeschulmänner).⁶

All German children are required by law to attend the common school (Volksschule), or an accepted substitute, from the age of 6 or 7 to that of 14 years.⁷ This common school is much like our own, differing chiefly in that religion is given a prominent place, and a slight fee is charged; it is divided into separate classes, though with equally good teachers, for pupils of different pecuniary rank (by charging different school fees); and like German schools in general, teaches fewer subjects than we do, but these with greater thoroughness. Some

¹ *Ibid.*, p. 111.

² *Eng. Ed. Educ. Rev.*, 1898, p. 111.

³ *Spec. comm. rep.*, vol. 28, pp. 12-14.

⁴ *Ibid.*, pp. 12-14.

⁵ *Ibid.*, pp. 12, 13.

⁶ With minor exceptions. *Ibid.*, p. 13.

common schools offer prevocational work, such as elementary drawing and work in paper, basketry, wood and iron (for boys), sewing and cooking (for girls).¹ At his tenth year, the parents of a boy in the common school must decide whether he is to continue his schooling beyond the compulsory attendance in that school. If so, he will leave the common schools at once and enter one of a number of types of school which offer themselves. If he is to be classically trained (with both Greek and Latin) he will enter the Progymnasium for its six-year or the Gymnasium for its nine-year course. If his training is to be semiclassical (including Latin, but not Greek), the Realprogymnasium offers him a six-year, and the Realgymnasium a nine-year course. If a liberal or modern training is desired, he will enter the Realschule for a six-year or the Ober-realschule for a nine-year course. Of these, in turn, all the nine-year courses admit to the appropriate faculties of the universities and to the technical and commercial high schools. The six-year courses are largely attended and completed, for the reason that their completion (or six years in a nine-year school) and the passage of an examination are rewarded by the one-year volunteer army certificate, by which the obligation to serve two years in the army is commuted to service for one year only, as a volunteer and with the chance to become an officer.² These courses are also prerequisite to entrance into many of the higher schools (höhere Schulen) of various sorts, commercial, technical, and engineering.

Of distinctly industrial schools there is a great body, with the scientific technical high schools at the summit. These schools are about the equivalent of our best colleges and university departments of engineering and other applied sciences. They train the technical leaders of industry. In them, probably more than in our universities, scientific investigation is given a very important place. Below them stand the middle technical and trade schools, of which there are many sorts: Mining schools (Bergschulen), building schools (Bauwerkschulen), textile schools (Textilschulen), schools of machinery (Maschinenbauschulen), and other schools for the metal industry, industrial art schools (Kunstgewerbliche Schulen), and other lesser groups.³ These middle schools are of two main types, the higher and the lower.

The higher middle technical schools are designed to train leaders of industry, but with a less thorough preparation than that offered by the technical high schools. As a rule, they require the completion of a six-year general course, such as secures the one-year military certificate, and at least two years of practical work in the student's

¹ Rep. of the N. J. Comm. on Indus. Educ. 1902, p. 10.

² Spec. cons. rept., vol. 23, p. 2.

³ Cf. Gewerbliche Fachschulen in Preussen, by F. C. G. Leipzig, 1902.

trade.¹ They are probably the approximate equivalent of our technical schools, colleges, and universities of less exacting standards. In them about two-thirds of the engineers of Germany are trained, only about one-third coming from the technical high schools.²

The lower middle technical schools are designed chiefly for the training of practical working master tradesmen, technicians of lower grade, for supplementary training of foremen (who generally rise from the ranks), and the like. They require for entrance several years practice of the trade to be studied and throughout their work emphasize the practical side. In Prussia, the technical middle schools, higher and lower, are more fully developed than in south Germany. The industrial art schools are a special type, in that they train those engaged in many different trades and industries in the application of art and of design to their several trades.

Of all those engaged in industry, only a small minority attend any of the above-mentioned schools. Nor in these schools do we find such great differences from our own technical schools of various grades. It is in the industrial schools for the masses of workers that Germany excels and with respect to these schools that we have most to learn from her. These, the lower industrial schools, are of two main sorts, day trade schools and improvement schools. The relations of some of these schools to each other and to other schools are often exceedingly close. They may use the same building, have the same teachers, and the same management and support. Where there are but few workshop facilities available, or where the improvement schools utilize workshops also, instruction in the lower trade schools may differ but little from that of the improvement schools, except as to length. But throughout Germany the attendance at day trade schools is but a fraction of that at improvement schools. This is because few boys who go into industry as ordinary workmen can afford to study so long without earning, and because there is ordinarily no necessity for so doing by reason of the training to be received as an apprentice and in industrial improvement schools. There is also, as we shall see, serious question by many employers in industry as to the advisability of such schools for the training of the rank and file of workers. As a general rule, these lower day trade schools for workmen do not constitute substitutes for apprenticeship; but a few such schools, according to Dr. Kerschensteiner, for wrought-iron workers, machine builders, joiners, weavers, plumbers, etc., do take the place of apprenticeship.³

The type of school which supplies the great bulk of the training of the mass of workers supplementary to the training derived from their

work itself, is the industrial improvement school (*gewerbliche Fortbildungsschule*). In this school the majority of workers receive their first and only industrial training imparted by any school. German improvement schools are now of three forms: General, industrial, and commercial (*allgemeine, gewerbliche, and kaufmännische*). These schools, as we have seen above, were originally all general schools and of a type which aimed merely to continue and perhaps slightly expand the common school training. Such schools are now becoming a less and less important part of all *Fortbildungsschulen* and are also adding new subjects to their curricula, as civics, hygiene, studies of transportation, etc. Their organization varies from place to place. In some important cities there is no such school, and such few general classes as are held are a part of the industrial improvement school. The recent great growth of the industrial schools is a striking fact. Those youths engaged in industry attend the industrial, and those in commerce, the commercial improvement school; whether attendance is compulsory or voluntary, youths naturally attend the schools organized for their type of occupation.

The relative importance of day trade schools, of improvement schools, and of the various types of improvement schools, is indicated by the following figures. There were, in Germany, in 1906, about 130,000 pupils in general improvement schools; 206,000 in industrial improvement schools (including some called trade improvement schools—*fachliche Fortbildungsschulen*); 40,000 in (day) trade schools; 53,000 in commercial schools; 67,000 in agricultural schools; 71,000 in girls' general continuation schools; and 23,000 in girls' trade schools.

By the National Industrial Law, established in 1891, compulsory attendance was provided for, and the improvement schools thus greatly prospered. This law provides as follows:

The undertakers of industry must allow to their workers under 18 years of age who attend an institution for instruction recognized by the community authorities or by the State as an improvement school the necessary time for this purpose, as specified by the appropriate authorities. The instruction may be on Sunday only when the hours of instruction are so set that the pupils are not hindered by them from attending the chief religious service, or a service of their confession especially established for them with the consent of the religious authorities. * * * Institutions in which instruction in woman's hand and house work is given are improvement schools in the intention of these regulations.

A community or a wider union of communities (*Kommunalverbandes*) may, by national statutory regulations, so far as regulations are not established by the separate States, require the attendance at an improvement school of male workers under 18 years, as well as of female commercial clerks (*Handlungsgehilfen*) and female apprentices under 18 years. In the same manner the necessary regulations may be made for the enforcing of this obligation. In special regulations may be made by statutory

provisions to insure a regular school attendance, as well as to regulate the duties of parents, guardians, and employers; these regulations and suitable deportment may be enforced in the improvement school. Those individuals are freed from the statutory obligation to attend an improvement school who attend a guild or other improvement or trade school, so far as the instruction of these schools is recognized by the higher administrative authorities as an adequate substitute for that of the general improvement schools.¹

The several German States have reserved to themselves the full regulation of their school affairs and so the above national law has no compulsory force and is permissive only.² Great results have, notwithstanding, followed it; for in those States which have no law regulating improvement schools the national law, in conjunction with local ordinances, has in many localities provided compulsory attendance. The national law, and the compulsory attendance provided under it for some schools, has also served as an example to the States, and has stimulated them also to legislate for compulsory attendance. On the basis of the national law and local ordinance, where such local ordinance exists, employers must allow time for the school attendance even of those workers who attend voluntarily.³ The national law further provides that in localities where a trade school recognized by the State or communal authorities exists the obligation of the employer to insure time to his youthful workers to attend a school recognized as an improvement school (as sec. 120 above) applies to such trade schools also.⁴ The manager (Geschäftsinhaber) must hold his apprentices and journeymen under 18 years to attendance on the improvement and trade schools and must watch over their attendance. These provisions (in secs. 120 and 139c) are enforceable against employers or parents by fine of not to exceed 20 marks (\$4.80), or in case of inability to pay, by imprisonment, not to exceed three days for each infringement.⁵

Almost all the States have legislated on the subject of the improvement schools, and their main requirements in 1909 are set forth in the accompanying table.

¹ R. G. O., sec. 120, pp. 330-334.

² Baer, Ewald: *Die deutsche Fortbildungsschule im Jahre 1909*, p. 1.

³ R. G. O., sec. 120, notes, p. 322. (Hoffman edition.)

⁴ *Ibid.*, sec. 139d, pp. 429-3.

⁵ *Ibid.*, sec. 120, 4. pp. 303-4. §

German State laws on compulsory attendance at improvement schools (1909).¹

	States, with approximate population (1908).	Minimum attendance compulsory for boys.	Minimum attendance compulsory for girls.	Remarks.
1	Prussia ² (37,000,000).			In Posen and West Prussia, the minister of commerce and industry may make attendance compulsory.
2	Bavaria (6,500,000).	For 3 years, 2 or 3 hours a week, in Sunday school; or in improvement school, where the community so chooses.	Same as for boys.	
3	Saxony (4,500,000.)	For 3 years, 2 or 3 hours a week.	Only by community action; then not over 2 years.	
4	Wurttemberg (2,300,000)	For 2 years, 2 hours a week, 40 weeks a year. If community be excused from establishment of an improvement school, then 3 years in Sunday school.	Same as for boys.	Every community with 40 boys under 18 years in commerce and industry, must establish an industrial improvement school, and such boys must attend it for 3 years, 280 hours a year (may be 4 years for special trades).
5	Baden (2,000,000)	For 2 years, 2 hours a week.	For 1 year.	A community may require compulsory attendance of both sexes through their 18th year at industrial or commercial school.
6	Hesse (1,200,000)	For 3 years, 4 hours a week, 4 or 5 months.	A community may establish an improvement school for girls.	
7	Mecklenburg-Schwerin ³ (625,000)	In cities for hand worker apprentices, through their apprenticeship.		Industrial schools to have courses for 3 years or more, 8 hours a week.
8	Mecklenburg-Strelitz ⁴ (103,000)			
9	Saxe-Weimar ⁵ (388,000)	For 2 years, twice a week at least (in winter, not over 6 hours a week).	A community may require attendance for 2 years up to 6 hours a week.	
10	Oldenburg ⁶ (438,000)			
11	Brunswick ⁷ (485,000)			Attendance through compulsory term in which 18th birthday is reached. Compulsion may be established by the State, for improvement schools not public institutions, and single groups of industries, on motion of those concerned.
12	Saxe-Meiningen (399,000.)	For 2 years, 4 hours a week.	Same as for boys.	
13	Saxe-Altenburg (308,000.)	For 2 years; full year, 2 hours a week, or 5 months, 4 hours a week.	A community may establish an improvement school for girls.	

¹ Compiled from data in Bear, pp. 5-22.² No law, except for miners. National industrial law thus in force for miners (secs. 120, 120A, 122, 123).³ Section 120 permits localities to require attendance.⁴ State approval necessary for establishment of local compulsion.⁵ Law reiterates national industrial law.⁶ No law. National industrial law thus in force.

German State laws on compulsory attendance at improvement schools (1909)—Continued.

States, with approximate population (1906).	Minimum attendance compulsory for boys.	Minimum attendance compulsory for girls.	Remarks.
14 Saxe-Coburg-Gotha..... (242,000.)	Coburg: For 2 years, winter months, 2 hours a week. Sachsen-Gotha: For 3 years, 2 hours a week through the year, or 4 hours a week for 4 or 5 months.	Coburg: A community may require compulsory attendance for 2 years. Sachsen-Gotha: A community may require compulsory attendance.	
15 Anhalt ¹ (328,000.)			Similar to law of Prussia.
16 Schwartzburg-Sondershausen..... (85,000.)	For 2 years, 4 hours a week (in special cases, 2 hours), 4 to 6 months.	A community may establish an improvement school for girls and require attendance (compulsion may be limited to those in industry).	
17 Schwarzburg-Rudolstadt ¹ (97,000.)			A community may require attendance for 2 or 3 years.
18 Reuss (senior line) ² (70,000.)			
19 Reuss (junior line)..... (145,000.)	If superior school authorities so decide, for 2 years, 2 hours a week through the year, or 4 hours a week for 6 months.	A community may establish an improvement school for girls.	
20 Lippe ² (145,000.)			
21 Schaumburg-Lippe ¹ (45,000.)			
22 Waldeck..... (59,000.)	For 2 years, 4 hours a week.		
23 Lübeck..... (100,000.)	For all apprentices through their apprenticeship; all the year 8 hours a week, or winter months alone 12 hours a week. For commercial apprentices and clerks through their eighteenth year.		
24 Bremen..... (363,000.)	For 3 years (no minimum; 4 to 6 hours a week maximum); unskilled workers excepted.		
25 Hamburg ² (575,000.)			
26 Alsace-Lorraine ² (1,216,000.)			

¹No law except for miners; national industrial law thus in force for miners (secs. 130, 133^a, 142, 150). Section 123 permits localities to require attendance.

²Law requires national industrial law.

³No law. National industrial law thus in force.

Where no law on the subject exists the provisions of the National Industrial Law, as stated above, permit compulsory attendance to be required by any community wishing it. Some States have reiterated the substance of the permission of the national law. Bavaria, Saxony, Württemberg, Baden, Mecklenburg, Saxe-Weimar, Saxe-Meiningen, Saxe-Altenburg, Saxe-Coburg-Gotha, Schwarzburg-Sondershausen.

and Waldeck require all boys in industry or commerce, and not otherwise as well educated, to attend improvement school (in some few cases Sunday schools) for two to three years after their compulsory attendance at common school has ended; Mecklenburg-Schwerin, Reuss Junger Linie, Lubeck, and Bremen make similar but variously qualified requirements. Only a few States require girls to attend improvement (or Sunday) schools—Bavaria, Wurttemberg, Baden, and Saxe-Meiningen (Sadler says also Waldeck and parts of Prussia).¹ As a rule, the compulsion is for attendance on a general improvement school, though sometimes on an industrial or commercial school. Those are excepted from the requirement who are receiving at least an equivalent education otherwise. Attendance at a school approved as a substitute for the improvement school frees ordinarily from the obligation to attend that school. For a summarized statement of the extent of improvement schools let us take that of Dr. Kerschensteiner:

In south Germany there is no city or town, however small, without one such school at least for all boys. In north Germany the great industrial town of Essen is the only larger town in which such a school is wanting.²

The industrial improvement schools are generally not to be called trade schools.³ Few of them, the country through, have many workshops, and none or practically none of them attempt to act as substitutes for apprenticeship. They are technical schools, seeking to impart the "why" and "how" of the trades, or part technical, part general schools. We shall see more fully in the succeeding chapters of what nature these schools are and what results they are accomplishing. Throughout, let it not be forgotten that these schools merely supplement, and aim merely to supplement, the training received in apprenticeship, even though this service be highly important.

After the industrial schools of various types had been established the State followed the example of the individuals and groups who had founded them and founded or aided in the founding of similar schools and obtained year by year more and more control over all these schools. This was largely done by means of providing subsidies for the industrial schools, to obtain which they must meet certain requirements with regard to grade and kind of work and the like, and submit to certain supervision. Inspectors enforce the State requirements. Thus the State tends to unify and standardize these schools, as well as to add greatly to their available funds. Certain modes of support are typical, though particular arrangements vary greatly from place

¹ Sadler, *op. cit.* 18, p. 517.

² Kerschensteiner: *Three Lectures, etc.*, p. 9. Essen has had a voluntary industrial improvement school since 1848. In 1910, at request of the guilds, this was made a compulsory school.

³ Certainly not in the American sense of the term; see *preface*.

to place and school to school. Distinctly local schools are usually supported chiefly by the community with aid from State subsidies (except, usually, in case of improvement schools), while guilds, associations, and unions often contribute lesser amounts (though in some cases a large share). The higher schools receive usually large State support on account of their service to a wide district. The boards of directors include in most cases representatives of the industries concerned, or some of them (usually guild members), city officials, and representatives of any other contributors.

The State administration and supervision has been vested both under departments or ministries of education and those for commerce and industry. The result of many experiments and repeated changes is in most cases the supervision of the industrial schools by a different body from that set over the other schools and one representing the interests of industry. Only thus, it was found, could the industrial schools be kept from becoming academic, true to their name and purpose, and be made practical and adjusted to the changing needs of industry. Cooperation, in the form of assistance and advice, of the educational authorities was found essential, however, to efficient operation of the schools, and this is now usual.¹

Industrial schools for girls and women are still greatly lacking. Housekeeping schools and schools training for women's industries, as millinery, dressmaking, etc., and for domestic service, are found in many places. Commercial schools are one of the most numerous classes of schools for girls, while general improvement schools exist in many places. The present tendencies toward more improvement schools for girls are directed more toward the establishment of commercial than of industrial schools. There is probably to-day greater need in Germany for industrial schools for girls and appropriate compulsory attendance on them than for any other advance in industrial education.

¹ Spec. cons. reps., vol. 33, pp. 137, 138; Rep. N. J. Commis. Indus. Educ., p. 175; Saar, pp. 3-52.

CHAPTER IX.

THE INDUSTRIAL SCHOOLS OF HAMBURG.

Hamburg, a city of some 802,000 population (1905) and one of the chief ports of the world, is situated near the mouth of the Elbe River. Originally a member of the Hanse union, the city is now one of the constituent States of the Empire, as the proud name of *freie und Hanse Stadt Hamburg* gives evidence. Primarily commercial, and, because of its location and tariff-free portion of the harbor, a great port for transshipment; it is now beginning also to see the growth of a thriving industrial life. The chief groups of industries, with approximate numbers of workers engaged in each, are: Machine industries (22,000); foodstuffs (8,900); metal working (6,700) (machine and metal working industries include about 10,000 engaged in shipbuilding); wood working (6,600); clothing (5,800); book printing and type casting (4,400); leather (4,200); fine lingerie (2,900); cleaning industries (2,900); forest products, fats, soaps, oils, etc. (2,700); building (2,500); chemical industries (2,200); painting, lacquering, etc. (2,000).¹

Until recent years there were a number of guild industrial schools in Hamburg, and a few of these still survive, the guilds concerned requiring and enforcing the attendance of the apprentices under them. But for the most part, as the city has extended its activities in the field of industrial education, the guild schools have been taken over by the city and now constitute a part of the public system of industrial schools. This change has been satisfactory to the guilds as to all others concerned.²

The chamber of industry was established in 1903 and still continues theoretical master courses (Meister-kurse).³ There were in 1910 13 such courses for different industries and groups, each including about 30 independent handworkers and journeymen (who must be 24 years old). The purpose of these courses is the improvement of handworkers in general, and especially the preparation of young handworkers for the master's examination (Meisterprüfung). The courses meet ordinarily week-day evenings from 8 to 10 o'clock, and the whole course includes at least 40 hours of class work. The teachers are taken from higher schools, and thus are above the ordinary grade. They are assigned classes in related industries so

¹ Table 2, 374. *Jahresbericht der Hamburgischen Gewerkschammer für 1910*, pp. 76-81.

² Dr. Rudolf Ottendoff, a director of the Hamburg Gewerkschammer.

³ *Jahresbericht Gewerkschammer*, 1913. Anhang, pp. 6-10.

far as possible, that each may adapt himself to the special needs of that group of industries. The subjects treated are industrial book-keeping, notes, bills of exchange, etc. (Wechseellehre), industrial calculation (of costs, etc.), and law (the chief provisions of the industrial law, of the industrial insurance laws, of the law of associations, and of other laws especially applicable to handworkers). The attendance on these courses in 1910 was 300, from 15 different industries (with only 4 per cent of absences).¹

Since 1906 the chamber of industry has established also practical master courses.² The purpose of these courses is not the training of journeymen to become masters, nor any elementary training at all, but rather the education and practice of masters in the latest developments in their respective industries. This includes training in the use and desirability of the most modern machines, simple investigations of materials, technical, scientific, and industrial art lectures and practice to give an up-to-date viewpoint, and the like. There were 25 courses for 14 industries in 1910. A few titles of classes are: Concrete construction (2 classes), investigation of baker's materials, large scale production of shoes, automatic welding and cutting of metals (4 classes). These classes usually meet Sunday morning from 8 to 12, or week-day evenings from 6 to 11. The total number of class hours averages about 32 for each course. The teachers are engineers, architects, chemists, painters, and other experts. The attendance in 1910 was 295, the men ranging in age from 25 to 60, and averaging perhaps 35 to 42 years.³ The interest of the participants was very great, promising important results on industry.

The city of Hamburg has what may truly be called a system of industrial schools, fairly comprehensive in its scope. It includes the following:

- (1) A building trades school (Baugewerkschule) with department for underground construction.
- (2) A technikum or technical school, including (a) a higher machine builder's school (höhere Maschinenbauschule), (b) a higher school for construction of ship machines (höhere Schule für Schiffsmaschinenbau), (c) a higher shipbuilder's school (höhere Schiffbauschule), (d) a higher electrical school (höhere Schule für Elektrotechnik), and (e) a school for ship's engineers (Schiffingenieurschule).
- (3) An industrial art school (Kunstgewerbeschule).

¹ The courses cost about 4,108.77 marks (\$663.34), of which about half (2,057 m.) came from fees of 5 marks per participant. Jahresbericht Gewerbekammer, 1910, Anhang, p. 33.

² Jahresbericht Gewerbekammer, 1910, Anhang, pp. 43-74.

³ The total cost in 1910 was 14,248.79 marks (\$3,419.67), of which 2,114 marks (\$527.50) was met by fees. The balance was paid by the chamber of industry from funds furnished by the city for the promotion of industry. The average costs (in excess of fees) were: For each course, \$116.40; for each participant, \$9.57; for each class hour, \$3.65. Jahresbericht Gewerbekammer, 1910, Anhang, p. 73, 74.

- (4) A wagon builders' school (Wagenbauschule).
- (5) A day industrial school.
- (6) Eleven evening and Sunday industrial schools.
- (7) Eight commercial improvement schools.
- (8) An improvement school for girl and women clerks.

I visited all of the above schools except the last 2, and including 2 of the 11 evening and Sunday schools.

The building trades school is a day technical school of middle grade, preparing the graduates of its two and one-half year courses for technical positions, or in connection with practical training, for positions as master builders. It has no shops; drawing, mathematics, and design are prominent in its curricula. Many of its students attend only during the winter half year, working at their trade during the summer, as shown by the attendance of 146 students in summer term 1909, but 405 in the winter term of 1909-10.¹

The technikum is a type of the middle technical schools which train about two-thirds of the German engineers.² For entrance³ the military volunteer certificate must be possessed, involving the completion of six years' work in a secondary school,⁴ and two years of practical work; or certain other equivalents. The subjects taught are similar to those in technical colleges in the United States. The courses last but two years; but since the students are allowed only the short vacations usual in industry, since they have all had practical experience, and thus are given no shopwork, and since their practical training enables them to grasp the theoretical with the minimum of difficulty, this period proves sufficient to turn out well-equipped men. During the school year 1909-10 an average of 326 students attended the technikum. The cost of this school to the city, on account of the high salaries of the necessarily very well-equipped teachers, is the greatest of all the city schools.⁵ The graduates are quite uniformly able to secure good positions.

The industrial art school seeks, in its day classes, to train in drawing, painting, sculpturing, and the like, and in industrial design, primarily those persons engaged in industry who have completed their apprenticeship, and also apprentices. There are both day and evening classes. Some classes adapted to special trades are those in interior architecture, glass painting, etching, bookbinding, photography, embroidery, and weaving. Much of the students' work was excellent, especially the artistic hand bookbinding. That it is practical is attested by their ability to secure good positions.

¹ Programm der Staatlichen Baugewerkschule für Hochbau und Tiefbau zu Hamburg; and Bericht über das Schuljahr 1909-10.

² Staatliche Technikum Hamburg. Programm; and Bericht über das Schuljahr 1909-10.

³ Except for the Ship Engineer's School.

⁴ M. V. p. 74.

⁵ 4200 M. mark per student per year. Hans Proben, Technikum.

The wagon builder's school is a small day school, in which about a score of journeymen and master wagon builders receive technical instruction for a year each. They are thus enabled to become designers, masters, and foremen. The trade instruction is imparted by a master wagon builder; while instructors not masters in the trade teach free-hand drawing and other less specialized subjects. The school has now been in existence for 25 years, and according to Herr Behncke, its head teacher, is so successful that in the fall of 1911 a similar school for smiths was to be opened.

The day-industrial school and chief Sunday and evening industrial school occupy the same large building, centrally located, where are also the technikum, building trades school, and industrial art museum. Classes are held during the daytime, evenings, and Sunday morning. These two schools consist of 14 trade schools for 20 trades, attendance at which is compulsory for apprentices of guild members, and of classes for voluntary attendance. The trade schools, in the winter term 1909-10, included 2,381 students, chiefly apprentices, while the voluntary classes included 1,618 students (1,186 apprentices, 287 journeymen, and 145 others). The subjects taught are almost all technical, and there are but few workshops. Trade drawing is taught separately for 17 trades, and similar specialization of other subjects is the rule. The number of hours of instruction per week varies from 5½ to over 9 for voluntary pupils, and 3 to 18 (the latter for painters and lacquerers), with an average of about 8 for the compulsory trade schools.²

The so-called small industrial schools are scattered through the city in 10 common-school buildings.³ They include evening and Sunday schools with special courses for the several trades; apprentice trade schools, attendance on which is enforced on their apprentices by guilds and guild members concerned; and incidentally, classes for common-school boys in free-hand geometrical and projective drawing. A total of 3,560 pupils attend all these schools (winter, 1909-10). Only apprentices and other youthful workers are accepted as pupils, except in the drawing classes for school boys.

The evening and Sunday schools are attended voluntarily and offer six hours of instruction weekly, from 7 to 9 one evening a week, and from 8.30 to 12.30 Sunday morning. The subjects offered are: German, arithmetic, bookkeeping and law, writing, study of geometrical forms, algebra, geometry, trigonometry, free-hand drawing, geometrical drawing and projection, and trade drawing for builders, machine builders, electricians, wrought-iron workers (Schlosser)⁴,

² *Lehrplan der Staatlichen Wagenschule zu Hamburg; and Lehrplan der Deutschen Schmiedeschule zu Hamburg.*

³ *Staatliche Hauptgewerbeschule, Tischgewerbeschule, and Wagenschule zu Hamburg. Bericht, 1909-10.*

⁴ *Staatliche Gewerbeschulen-Bismarckstrasse are in Hamburg. Bericht, 1909-10.*

⁵ A hard word to translate. Not "blacksmith" as ordinarily rendered, but representing one engaged in a rough, tedious mass of operations between the smith and the machinist, concerned perhaps as much with wrought-iron as with anything else.

plumbers, and machinists. What these smaller schools lack, their pupils can supplement by added work in the chief industrial schools (161 did so in 1909-10).

The trade schools, like those in the chief industrial school, have been established only when the cooperation of the chamber of industry and of the guild or guilds concerned could be secured. The school authorities and the guilds agreed on a curriculum, and the guilds enforce attendance of their apprentices throughout their apprenticeship, being aided in this by the chamber of industry.² Eight hours of instruction are given weekly; four hours on Sunday morning, and four hours on two evenings from 6 to 8 (for wrought-iron workers), or on one afternoon from 3 to 7 (for plumbers). There are two of these schools, one for wrought-iron workers (Schlosser) including 447 pupils (in winter 1909-10) in four different buildings, and one for plumbers and related trades, having 686 pupils in the one building. The subjects taught in the ironworkers' school are drawing, study of industry (Gewerbekunde), arithmetic, business composition, bookkeeping, and civics (Bürgerkunde), all taught with special reference to the trade.

The curriculum of the apprentice trade school of the plumbers and related trades, which is typical of that of the other trade schools, includes four years of work, so arranged, however, as to meet the needs of those who complete apprenticeship in three years and thus may no longer be required to attend. The scheme is as follows:

Curriculum of the apprentice trade school of the plumbers and related trades.

Subjects.	Number of hours weekly.			
	First year.	Second year.	Third year.	Fourth year.
Industrial drawing.....	4	4	4	6
Study of industry.....	1	1	2	1
Industrial arithmetic.....	2	2	2	1
Business composition.....	1	1	1	1
Bookkeeping and calculation.....			1	
Civics.....			1	

The drawing so prominent in the course includes geometrical drawing and projection the first year, and after that trade drawing exclusively. The study of industry includes a great variety of data calculated to orient the apprentice in his work and general place in life, such as materials, processes, systems of installation of gas, water, electricity, etc., and a little industrial law. The industrial arithmetic is entirely concerned with practical problems, as the reckoning of wages, costs of industrial insurance, cost estimates, and final reckoning of costs, purchase of materials, notes, and exchange.

² The Hamburg Gewerksammer, unlike most in Germany, supervises factories as well as handwork industries.

Business composition gives practice in writing letters or forms for various business purposes, in which the practical end is given first place. The bookkeeping includes a little cost accounting. Finally, the civics class adds a little to the minimum data on industrial law and the like in the study of industry, in familiarizing the apprentices with certain laws, branches of government, industrial and public duties. There are no workshops in this school, though numerous models aid in its instruction.¹

The instruction is partly by professional teachers, partly by masters in the trades concerned. The latter give all the trade drawing. The teachers are paid only 3 marks (72 cents) per hour class in the daytime, and twice this amount in the evening.

Attendance on any of these schools is not compulsory by either State or other public authority. Attempts to require attendance by State action have so far² failed. According to section 120 of the National Industrial Law,³ and a State law of Hamburg of October 7, 1864, all employers are required to allow their apprentices to attend an industrial school at least six hours a week, if they wish to do so. These laws are not of much force and have but little effect on the attendance. At most they but require the employer to free his apprentices from other duties one evening and Sunday morning, which most would do in any case. Compulsory attendance in Hamburg, so far as it exists, depends solely on guild action, spurred on by the chamber of industry.

About 70 per cent of the Hamburg guilds are compulsory.⁴ These guilds require all their apprentices to attend the evening and Sunday or other industrial schools throughout their apprenticeship, or so long as the course lasts. This compulsion is effectively enforced through the several masters, members of the guilds in question, by means of fines imposed by the guild on masters whose apprentices are irregular in attendance or fail to attend the school. The chamber of industry has also exerted pressure on negligent masters successfully. The voluntary guilds seek likewise to enforce attendance in their respective industries, but can do so only for their own members. Industrial enterprises aggregating over 35,000 masters and workers have no manner of compulsion on attendance of their apprentices.⁵ This is the weak spot of the system, and one that will probably be changed in time in favor of city (State) compulsion.

¹ This curriculum was obtained from a manuscript furnished by Herr Schulinspektor August Kasten. The school to which it refers was inspected in many classes by the author, under his guidance.

² Latest date, 1911.

³ Cf. ch. 8, p. 82.

⁴ In 1910 there were 8,804 masters and 34,116 masters and workers together in and under compulsory guilds; 1,835 masters and 14,001 masters and workers together in and under free guilds. Gewerbeamt Jahrbuch, 1910, p. 65.

⁵ Gewerbeamt Jahrbuch, 1910; worked out from figures on pp. 66, 81.

Some of those apprentices and other youthful workers not required to attend do so voluntarily. Thus the machine builders' guild is free, but every apprentice in this trade attends the evening industrial school, because the mechanical drawing there taught is absolutely necessary to him in his work. Another incentive to voluntary attendance on these schools is the need of the apprentices for the training there received, if they are to pass the journeyman's examination, or later the master's examination. These examinations, which are both practical and theoretical, can in most cases be passed only by those apprentices and journeymen who have attended these schools. In 1910, 483 apprentices passed the journeyman's examination and 167 journeymen the master's examination.¹

Most apprentices in Hamburg attend an industrial school voluntarily or otherwise; so there can hardly be said to be a special demand for their students. The employers are able to obtain a larger number of skilled workers than if there were no industrial schools in the city. The skilled workers available for industrial purposes are steadily increasing in numbers, and in those industries where skill is demanded a steadily growing proportion of workers is found who have passed the master's examination.² The industrial schools are found to stimulate the interest of the boys in their work. The chamber of industry states of the iron workers' classes that they have had a very beneficial influence on the journeyman's examination piece,³ which indicates principally practical, but also theoretical, ability. This influence was probably exerted chiefly through the drawing classes.

School products are very seldom sold, both because not much work is produced, which is of such sort and quality as to be readily marketable, and because the schools have no selling facilities. Even where these conditions are absent, the schools would sell but few products for fear of competing with and antagonizing the guilds.

None of these schools unduly increase the number entering a given industry, because none of them accept students who have not worked in the industry in question or are not at the time so working. Teachers who attend these schools as students and school boys in preliminary classes are excepted from this rule. The schools do not shorten the period of apprenticeship, for this is determined by the chamber of industry for all trades, according to the national industrial law on apprenticeship. The usual period of apprenticeship in Hamburg is four years. A shorter period is allowed in any individual case only by permission of the chamber of industry and usually on the payment by the apprentice to his employer of a specified sum instead of wages being paid him. This payment is made because the employ-

¹ Gewerbekammer Jahresbericht, 1910; worked out from figures on pp. 61, 62.

² Dr. Görmann; Gewerbekammer.

³ Gewerbekammer Jahresbericht, 1910. Anhang, p. 8.

ers say the boy is not worth much the first two or three years and that their profit occurs chiefly in his last (usually fourth) year of service. Thus the monetary difference to the boy may be in a typical case equal to two and a half (or three) marks a week foregone the first year, three (or four) the second, and four (or five) the third, or 475 (or 600) marks total, plus 150 marks paid to the master, or 625 (or 750) marks total (\$150 or \$180).¹ Such shortening of apprenticeship usually occurs in the case of a boy whose parents have money enough to advance him thus more rapidly, especially if he has continued in school beyond the common school.

All classes of people in Hamburg are, as a whole, favorable to the industrial schools; teachers and directors of the regular schools, employers and guilds, unions and workmen, parents and pupils. The parents of all classes are most heartily in favor of them, and it is from the parents that the greatest demand for their establishment has come. Not all individual employers are favorable, but as a class they are so in each trade and in all trades collectively. The consensus of opinion in the entire city is decidedly favorable to the industrial schools.

Their expense is not felt as a heavy burden by the taxpayers, but as money well spent, though the schools are expensive. The city (State) pays all the expenses of these schools, outside of the small sums received for tuition from pupils. The evening and Sunday schools require 10 marks (\$2.40) tuition a half year, the higher schools naturally more (the *technikum* 72 marks (\$17.28) a half year). Neither guilds nor employers aid the schools financially; nor do they supply materials or models, as in some other German cities. In some cases individual masters serve without pay on the school boards.

The modern tendency to specialization in all industries, with its resulting narrowing shop training, is met in some degree by the industrial schools in this manner: The schools teach somewhat of all branches of each trade in the school for that trade, attended by all apprentices who learn but a branch of the trade in their work. Thus they are prepared to understand and later supervise work involving all the branches, even though they be skilled in but a single branch.

In those industries where success depends most largely on the technical training, as in those where the artistic element enters largely (decorating, cabinetmaking, etc.), the employers are most decidedly in favor of industrial schools, and are willing to release their apprentices to attend them in the daytime, during working hours, considering the sacrifice well worth while, in view of the greater skill secured. In the most highly organized industries, however, such as shipbuilding (even though in some of these, as machine and ship building, industrial education such as provided in these schools is of

¹ Herr Schulinspektor A. Kasten.

great value) the employers are as yet usually unwilling to release their apprentices during working hours to attend industrial school. They claim that this disorganizes their factories too much, and that the result is thus not worth the sacrifice.

In the handwork industries also, wherever the benefit from industrial education is not great (chiefly the less skilled handwork), the employers usually consider the sacrifice not worth while and are unwilling to release their apprentices to attend industrial school during working hours. To sum up, the upper and lower grades of industries, in point of skill required and complexity of organization, desire industrial education for their apprentices, but, in the main, only during the apprentice's own time, while the middle grades (including some in the highest grade of skill, but not highest in organization) desire this education for their apprentices enough to release them for it during working hours, when they can receive it to the best advantage.

To look back over Hamburg's industrial schools, we see that she has excellent higher schools, and good lower schools. These lower schools are well adapted to the needs of industry, but greatly need the requirement of compulsory attendance to enable them both to reach the minority, at present neglected, and to require daylight attendance in all possible classes. Compulsory attendance, accepted and successful through large portions of Germany, will probably in time be adopted also in Hamburg, and will add to the efficiency of her already good system of industrial schools.

CHAPTER X.

THE INDUSTRIAL SCHOOLS OF BERLIN.

Berlin, the capital of the German Empire, had in 1905 a population of about two millions, which in 1912 had been increased by the annexation of suburbs to three and one-half millions. The city is thoroughly modern and cosmopolitan. Over half of her population are engaged in industries embracing almost all branches. Among these the metal-working industries are very important, especially the manufacture of machinery and electrical goods. The breweries rival those of Munich in extent.

The city possesses an elaborate system of industrial schools, many of them having attained their present form in comparatively recent years. In 1905 the administration of all the industrial and improvement schools was placed under a newly established commission for the city trade and improvement schools.¹ The city system of industrial schools includes: (1) Voluntary improvement schools (chiefly commercial); (2) compulsory improvement schools; (3) trade schools for apprentices; and (4) middle (höhere) trade schools. The great Royal Technical High School is located in Charlottenburg, a suburb continuous with Berlin. This great institution, specializing in research in applied science, and attended in 1909-10 by some 5,300 students from all parts of the civilized world, represents, with its fellows in other parts of Germany, the pinnacle of German industrial education. I am concerned chiefly with the foundations, however, and so turn to the humble, but no less important, improvement schools.

The voluntary improvement schools, of which there were 33 in 1909-10, are open, some to boys, some to girls, and some to those of both sexes. They are chiefly commercial in nature, and some wholly so. A few have industrial and housekeeping courses for girls, such as design drawing for tailors and for lingerie sewing, repairing, ironing, machine sewing and machine embroidery, tailoring, and millinery. Attendance on these voluntary improvement schools does not free from the obligation to attend a compulsory improvement school, where such obligation exists.

The compulsory improvement schools (Pflichtfortbildungsschulen) are 10 in number and have their headquarters in as many chief buildings scattered through the city, though spreading over freely into the common school and other buildings where necessary. Some of these schools, as also some of the voluntary improvement schools,

¹ Die Deputation für die städtischen Fach- und Fortbildungsschulen.

were once guild schools, since taken over by the city. Others have been city schools since the year 1799, though not becoming specialized as industrial and commercial schools until the period beginning in 1873. The last stage in their development was the requirement in 1905 by city ordinance, passed under the permissive provision of the National Industrial Law,¹ of attendance of all male industrial and commercial workers² on the compulsory improvement school, from the time of their release from common school until their seventeenth year.³ As stated in the table in chapter 8, pages 83 and 84, throughout most of Prussia attendance on improvement schools is compulsory only by local ordinance. The Landtag had in 1911 a bill under consideration to require compulsory attendance throughout the State, in towns of 10,000 or larger population as well as in cities.

The compulsory improvement school must furnish instruction and require attendance at least four hours a week, but not over six. The classes for unskilled workers extend through four hours for skilled workers, and for boys in commercial work through six hours weekly. The hours set are usually in afternoon or evening though sometimes in the morning, and never later than 8 in the evening. Some classes of skilled workers meet twice a week for three hours at a stretch, some once for six hours. The classes for unskilled workers are usually in the evening.

The subjects of instruction are three: German, arithmetic, and drawing. There are no workshops in these schools. The pupils, all of whom are apprentices or unskilled boy workers, are grouped in classes according to their trades. The unskilled workers are grouped together and receive instruction more general in nature than that given to the apprentices. Their numbers are about one-third of the whole enrollment. Each of the 10 schools has classes for certain groups of trades. Thus the school which I visited⁴ had 14 classes for metal workers, including 8 for wrought-iron workers, 5 for engravers and die sinkers, and 1 for molders. It had 42 classes for the art industries, including 10 for engravers, 9 for braziers, 13 for lithographers, etc., and 10 for bookbinders. It also had 12 classes for the unskilled workers, not separated closely according to their occupation. The total number of pupils in this school in the winter of 1909-10 was 2,940.⁵ Many of the commoner trades have classes in a number of different buildings or in almost all. Where there are but a few apprentices of a trade in a district, classes are formed of

¹ R. G. O., sec. 120; cf. ch. 8, p. 83.

² With minor exceptions.

³ Der gegenwärtige Zustand und die nächsten Aufgaben des Berliner Fortbildungsschulwesens. Stadtschulrat Dr. Carl Michaelis, 1911. Also: Übersicht über das Fach- und Fortbildungsschulwesen der Stadt Berlin, 1909-1910, pp. 61-68.

⁴ Of the second school district.

⁵ Übersicht, pp. 69-71.

those in related trades, or related branches of a trade. Those in commerce are usually in ungrouped classes, though there are some classes for certain branches, as for those in businesses selling iron products.

The compulsory improvement schools of the whole city had in May, 1909, separate classes for the following trades and groups of trades¹ (the number of classes of all grades indicated after each trade): In the building trades, 82—including masons, plasterers, and roofers (15); oven makers (3); woodworkers (45); painters (8); glaziers (6); stone-masons (5). Among metal workers, 234—including in common classes (57); ironworkers (60); machine builders (42); mechanics (57); plumbers (11); molders (7). Of the art trades, 89; made up of classes in common (7); engravers and chasers (12); brass founders (10); lithographers (15); those in bookmaking industries (12); photographers (3); gold workers (5); tapestriers (15); sculptors (6); lacquerers (4). In clothing industries, 31; including tailors (21); furriers (4); shoemakers and saddlers (6). In the food industries, 41; constituted by bakers (23); confectioners (3); waiters and cooks (15). Of barbers and hairdressers, 15; consisting of classes in common (12); wig-makers (3). Of commercial workers, 158; made up of classes in common (149); druggists (4); iron goods dealers (5). Of unskilled workers, 835, all in classes in common; and in certain miscellaneous trades, 17; including dentists (4), musicians (2), and pattern makers (3). The total number of different sorts of classes was 39, practically all of these having a class or classes for each of the three successive years of the course. The total number of separate classes was exactly 1,000, and the average number of pupils to a class was 31.14.

The German taught is identical with study of industry (*Gewerbe-kunde*), which means that in each class the teacher instructs the apprentices in technical, legal, civic, and other matters pertaining to the trade concerned, incidentally improving their oral expression. The students then write in their note books from memory on account of the subject just treated, and the teacher thus is able to correct their written expression. In some few classes, where the need is greatest, a little physics is taught by lecture and demonstration under the name of German or study of industry.

The arithmetic is a continuation of that of the common school, but taught with special reference to each trade or group of trades. The drawing is partly free hand, partly mechanical, and is also specialized to meet the special needs of the several trades. The type of instruction in general, and the ground covered, shows clearly the origin of these schools as variations from the older general continuation schools, whose function was to conserve and repeat the training of the common school, and if might be, to add slightly to it. As a con-

¹ *Ubersicht*, pp. 84-89.

cession or adaptation to practical needs, the German and arithmetic were specialized, and applied to industrial needs, and drawing was introduced.

The teachers are most of them professional teachers, selected from the best in the common schools. Some classes, especially drawing, are taught by practicing masters or journeymen, who must (as elsewhere throughout Prussia) attend a short pedagogical course before they begin to teach. There is some difference of opinion between the school authorities and the masters, as represented in the chamber of industry, as to the proportion of teachers in these schools who are professional teachers and tradesmen, respectively. The school directors tend to exaggerate the number of practical men; the masters to underestimate their number. In 1909-10 there were 732 teachers in these schools, of whom 19 were artists, 11 were masters in handwork, and 69 were engineers, architects, technicians, and the like. The remaining 633 were professional teachers of different grades.¹ The masters, however, are not satisfied with the number of practical men teaching, nor with the extent to which the instruction is practical and adapted to the needs of industry (*fachlich*). They also wish more subdivision of classes, to meet the needs of specialized trades or branches of trades. In considering these criticisms, it must be borne in mind that the compulsory schools have been in existence only since 1905, and that they are being adapted steadily closer and closer to the needs of industry, though they have yet much to attain. The drawings exhibited show that much very good work has been done in the schools.

In the winter term 1909-10, 32,320 pupils attended these compulsory schools, and in 1910-11 upward of 36,000. The costs, paid entirely by the city, were very slight, considering the great number attending. The total cost during the fiscal year 1910 was 1,089,910 marks (\$261,578.40), of which 811,910 marks (\$194,858.40) was for salaries.² These figures do not include cost of buildings, but only their maintenance. Thus, the annual cost, aside from first cost of buildings, was in 1909-10 \$8.09 per pupil. No tuition fees are charged in these compulsory schools. It must be remembered in considering this cost that assistant teachers are paid but 3 marks (72 cents) an hour, and other costs are low more or less in proportion.

More closely adapted to specific industrial needs in different trades is a large group of trade schools for apprentices. These schools are quite various in their nature and the sources from which they are supported. Eight of those existing in 1909-10 were supported by the city, the State, and by guilds, associations, and others interested.

¹ *Verwaltungsbericht des Magistrats zu Berlin, 1910. No. 9. Bericht über das städtische Fach- und Fortbildungsschulwesen, p. 2.*

² *Stadtkassenhaushalt, 1910. Kap. I. V. abt. 10, Pflichtfortbildungsschulen.*

Seven were supported as above, except that the State furnished no aid, while six were supported and controlled by corporations and guilds, receiving merely financial aid and cooperation from the city. Of these last, four were recognized as substitutes for the compulsory improvement school. Attendance on none of the others freed from the obligation to attend this school. Most of these schools have Sunday or evening classes, or both, while very few have day classes.

The largest of these apprentice trade schools is the Trade School for Book Printers (Die Fachschule für Buchdrucker), founded in 1875, which I visited. It is housed in a common-school building, where its classes meet two evenings a week, from 6 to 8. Its courses are of three years duration. Carefully planned by its directors to meet the special needs of their trade, and one of the few schools recognized by the city as a substitute for the compulsory improvement school, it is a type of the sort of school which many employers most prefer and a source of great pride and satisfaction to the association which founded and maintains it. This organization is the association of Berlin owners of book-printing establishments (Verein Berliner Buchdrückereibesitzer). It chooses the directors and supports the school, except for the rooms provided by the city. This association was once a guild, but owing to the objection of some of its members changed to the looser organization of an association (Verein).

The pupils are divided into two groups, the printers and the typesetters, who have separate classes. In the winter term of 1909-10 there were 1,456 pupils in the two departments. The instruction is practically all technical, there being no workshops except one printing shop. The classes for printers include German, arithmetic, physics, mechanics, drawing, and trade theory. The classes for typesetters are in German, Latin, French, English, Greek, arithmetic, trade theory, drawing, setting of Greek and mathematical sentences. All of these courses are closely adapted to trade needs, the languages and mathematics, for example, being studied only in so far as will enable the apprentices to set type in these subjects. The masters are well satisfied with the results of the school, in improved work done by the apprentices.

Another group of trade schools are the higher trade schools with classes for both journeymen and apprentices. These include: the Hall of Industries (Der Gewerbesaal) and the Second Handworkers' School (Die Zweite Handwerkerschule), supported wholly by the city; the First Handworkers' School (Die Erste Handwerkerschule), and the Building Trades School (Die Baugewerkschule), supported by the city and State jointly; the City Higher Textile School (Die Städtische Höhere Webeschule), supported by city, State, guilds, associations, and interested individuals; and the Berlin Cabi-

netmakers' School (Die Berliner Tischlerschule), supported by the city and by two guilds. Of these schools, two, the Hall of Industries and the Berlin Cabinetmakers' School, have, besides day classes for journeymen, seven branch Sunday and evening schools each throughout the city.

The Berlin Cabinetmakers' School, which I visited, is designed primarily for journeymen and masters, though it also accepts those apprentices who have worked two years at their trade. It offers day courses for 40 weeks a year and of two years' duration. The object is to correct specialized training and to fit its students to become technicians, designers, foremen, and superintendents. Its subjects are both theoretical and practical, as shown in the following standard course:¹

Subjects in the Berlin Cabinetmakers' School.

Subjects.	Hours per week.	
	First year.	Second year.
Practice in artistic cabinetmaking.....	20	16
Practice in machinery.....	4	4
Study of materials.....	4	
Chemistry.....		2
Bookkeeping.....	2	
Trade arithmetic.....	2	
Calculation (of costs, etc.).....		2
Drawing.....	16	24
Total hours per week.....	48	48

The school has very well-equipped shops and turns out work of a commercial character and very high grade. The design of furniture, of modest as well as of high cost, in Germany is on the whole of a high artistic grade. This result is largely due to the good work of such schools as this and the industrial art schools. The students make original designs, and execute many of them themselves. Others have been used in commercial work. The director is a master cabinetmaker and most of the teachers are experts in the trade. The school limits itself to furniture making, the First Handworkers' School specializing in interior architecture. The school also has departments for turning and sculpture.

In its Sunday and evening classes scattered throughout the city instruction is given evenings from 7 to 9, and on Sunday mornings. The instruction is almost all technical, drawing being easily first in importance, and there being only three subjects involving shop work, machine practice, turning, and modeling and sculpture in wood. The other subjects taught are ornament drawing, projective drawing, study of fastenings for and forms of wood, perspective and shadow

¹ *Übericht, pp. 2711.*

drawing, trade drawing, chemistry, trade arithmetic and calculation, and bookkeeping. The total number of students in day and evening departments in the winter, 1909-10, was 816. The cost for the year 1909¹ was 101,986 marks (\$24,476.64). The city bears almost all of this expense, the guilds contributing but little.

Another school visited, the City Higher Textile School, was established to meet the needs of the textile and clothing industries of Berlin. The instruction is technical and the school has many workshops, but it meets commercial needs as well as industrial. Many or most of its students, by making cloth at its looms and dyeing them in its dye shops, learn the technical aspects of fabrics that they may the better judge them and so handle them to better advantage in commercial dealings. There are both day and evening departments. The day department includes the following commercial courses to train in the handling of cloth: Design drawing, clothing manufacture, lace making, hand and machine embroidery, weaving and knitting, and dyeing.² Many of the students are in, or expect to enter, textile industries. The school meets the needs of those in, or looking forward to, the greatest variety of positions. The graduates of its courses secure better positions because of their study there.

These facts are shown especially in the evening dyeing classes, which draw apprentice dyers, technicians, university graduates in chemistry, and master dyers. The classes must naturally be divided into elementary and advanced. The results with all of these classes of students are seen in the attainment of special knowledge of the chemistry of dyeing and corresponding advancement. Practical master dyers, for example, who work ordinarily by rough rule-of-thumb methods, are enabled by this training to test their chemicals, and by this and other means to save materials.

There were, in the winter of 1909-10, 158 pupils in the day courses, 329 in those on evenings and Sundays. The total cost in 1909, exclusive of first cost of buildings, was 100,525 marks (\$24,126), of which 12,290 marks (\$2,949.60) was supplied by four interested guilds and associations, including the chamber of commerce.

The First Handworkers' School was also visited. This school is a day and evening school for apprentices and journeymen, whose classes are almost exclusively theoretical (technical). Its only workshop is a small one for book printers. The Second Handworkers' School is of similar type, but with more practical instruction in workshops. The Building Trades School has practically all theoretical instruction, while the Hall of Industries, a school especially for the machine trades, has much practical shopwork in addition to theoretic instruction. Most of the apprentice trade schools also have shops.

¹ The latest year of which I have data on costs.

² *Programm der Städtischen Höheren Weberschule, Berlin, 1911, pp. 5, 6.*

In such higher or lower trade schools as have workshops the apprentices and journeymen, many of whom receive but a one-sided and specialized training in their employer's shops, can learn somewhat of the operations as well as of the theoretic basis of other branches of their trade. The improvement school can also correct one-sided shop training to a slight extent, but only by the spoken and written word (chiefly the former) and not by actual doing of the operations studied.

Many specialized journeymen who as apprentices learned but a small range of operations in their employer's shop are enabled to change their branch of work and if necessary learn the new branch more quickly because of their school training. In some cases processes learned in a trade school may enable the future journeyman or master to do work which would otherwise have had to be sent out to a special shop. Thus press gilding, a branch of bookbinding, is taught practically in Berlin trade schools, but is a class of work undertaken by few but special shops. The trade-school training is sufficient to enable one who has grasped it thoroughly to carry on press gilding commercially, as incidental to bookbinding.

The quality of the work done in the higher trade schools is very evidently superior to that done by improvement school pupils. This is to be accounted for by the greater age of the pupils, the larger proportion of practical men who teach, and, in the more advanced classes, by the weeding process which has taken place at the end of the period of apprenticeship, for after this goal is reached no compulsion can force the journeyman to attend school unless he so desires, and only those continue in the trade school who intend to do their best and desire to advance. Many apprentices attend classes voluntarily in the apprentice trade schools, or evening departments of higher trade schools, in addition to their required attendance on improvement school. Such boys are in many cases the pick of the apprentices in earnestness and diligence. Some of the trade schools have no definite length of course, each boy or man advancing as fast as his capacity, application, and time permit.

A number of guilds require all the apprentices of their members to attend a trade school. The compulsory guilds¹ especially in many cases make such requirement, as they are better fitted to execute it than are the free guilds. This greater power is due to their control in such matters over the whole local trade in question. Such guild compulsion usually applies only after the completion of the apprentice's first year, for the masters do not consider that the average boy will benefit much from trade school until he is at least 15 years old and has had some experience in his trade. The compulsion applies

¹ In 1910 there were 26,994 members of compulsory guilds, with 8,887 apprentices; 22,007 members of free guilds, with 14,867 apprentices. *Geschäftsbericht der Handwerkskammer zu Berlin, 1909-10, pp. 42-47.*

usually to a specific school and lasts ordinarily till the close of the apprenticeship; that is, for two or three years. Almost invariably it requires attendance evenings (and Sunday mornings sometimes); that is, during the apprentice's own time. Attendance on very few schools is accepted by the city in lieu of attendance on the compulsory improvement schools.¹ The consequence of these facts is that over 5,000² Berlin apprentices must attend two schools during the last two or three years of their apprenticeship.

The chamber of industry has established a number of both theoretical and practical master courses for its district of Berlin and environs. Twenty-four bookkeeping courses were held in 1909-10, of 30 hours total length each.³ A course was opened whenever 20 participants offered themselves; masters and journeymen and also wives and daughters of masters were admitted. Reviewing and practice bookkeeping courses were also given. Two courses undertook a general study of business, including such items as the law of handwork associations, struggles between employers and employees, etc. Fifteen courses in calculation took up cost accounting and the like. Twenty-two courses of very thorough scope and duration of 48 to 60 hours prepared journeymen for the master's examination. The subjects were bookkeeping, calculation, study of notes, exchange, and checks, study of industry, industrial insurance laws, associations, and a study of special trade and business matters (special for each trade).⁴ A course in the law of associations was also given under the chief union of German industrial associations. Seventeen practical master courses were also given, of from 12 to 96 hours duration each, and attended by 345 participants.⁵ The Berlin practical master courses differ from those in Hamburg in that they are more concerned to lead the way along trodden paths than in Hamburg, where the emphasis is all on the latest methods.

The Victoria Improvement School (Die Viktoria Fortbildungsschule) for girls and women, which I visited, is a private philanthropic school⁶ some 25 years old, rooms for which are furnished by the city. It includes industrial, commercial, pedagogical, and domestic science work. Some definite results of the school's industrial training have been noted. Domestic training enables the girls to start as servants with 25 instead of 12 marks (\$6 instead of \$2.88) a month and to obtain better future wage also. For dressmakers, milliners, and the like the school training enables the girls to secure pay, though small, from the start, instead of working for about two

¹ E. g., of those above mentioned, on none of the six higher schools, and only on the Trade School for Book Printers.

² 5,554 apprentices. Übersicht, Supplementary table.

³ Total cost, 3,673 marks (\$981.53); per participant, 5.43 marks (\$1.30). Geschäftsbericht.

⁴ 463 candidates passed the master's examination in 1909-10. Ibid., pp. 170, 171.

⁵ Cost, 3,963 marks (\$1,426.87), total, or 17.1 marks (\$4.14) per capita.

⁶ One of two such schools in Berlin.

years without wage, as do almost all girls not specially trained. The advance in wage is also more rapid than for girls not school trained.

Several large firms in Berlin have their own apprentice schools. I visited what is probably the largest, that of the monster works of Siemens & Halske, manufacturers of electrical goods and machinery. The company had 225 apprentices in 1911, who were trained in a special shop and school, established in 1908, and recognized by the city as a substitute for the compulsory improvement schools. The instruction includes the same subjects as in these city schools, more specialized, however, to meet the needs of these apprentices and with some additional subjects. The curriculum is as follows:

Curriculum of apprentice school of the Siemens and Halske factory.

Subjects.	Hours per week.				
	First year.	Second year.	Third year.	Fourth year.	Total.
German.....	2	1			3
Arithmetic.....	1	1			2
Civics.....		1	1		2
Mathematics.....	1	1	1		3
Calculation.....			1		1
Bookkeeping.....			1		1
Drawing.....	2	2	2	2	8
Technology.....		1	1	2	4
Physics and chemistry.....			1		1
Electricity.....				2	2
Hours per week.....	6	7	8	6	27

After the usual trial period, the apprentices are regularly indentured to the firm for a period of four years. During their first year they work only in the apprentice shop, except when in the adjacent classrooms. Their tasks for the first year are in most cases merely exercises, through which they learn the skillful use of tools, principally hand tools. The amount of filing done is extraordinary, this type of work being regarded as an especially good training in steadiness and exactness and a suitable introduction to the trades prepared for. In a few cases, as with hammer heads, calipers, and the like, the products are used in the works. Throughout the first year the apprentices receive no pay.

At the close of the year each one is given a chance to see the different departments of the factory and to choose the one in which he wishes to work. Thereafter they work among the journeymen in that department of the factory at regular commercial work, still continuing their attendance on the school six or eight hours a week. During the last quarter year of their apprenticeship so many of them as desire return to the apprentice shop to draw and execute

1. Diplom-Ingenieur E. von Foss: *Über Frage der Ausbildung von Lehrlingen für die Gross-Industrie.* "Werkstattechnik". Bd. 8, 1911. Verlag Julius Springer, Berlin.

their journeyman's piece. The making of this piece is desired by the company, though not required. Most of the boys make it. The journeymen pieces on exhibition are a fine set, of which the firm is proud. In the journeyman's examination, the apprentices of Siemens Halske stand superior to all others in the same trades in Berlin.

The examination passed, or the apprenticeship merely ended, the journeyman or factory worker may go into any one of the four chief trades practiced in the factory—that of ironworker, turner, machinist, or electrician—and there specialize more narrowly than before.

The officials of the company with whom I talked expressed the greatest satisfaction with the apprentice school. Although yet so young, it has already shown fine results in raising the interest and skill of those it has trained. The company prefer their own to the city school, because their own instruction, given entirely by engineers and other industrial and commercial experts of the firm, is more practical and more closely adapted to the parallel-shop training, and to their industrial needs. A satisfactory proportion of the graduated apprentices, now journeymen, remain with the company. Further, the apprentices, considering their four-year term as a whole, and despite the cost of the apprentice school and shop and the unproductive first year of work, are found to be profitable to the company.

Looking over the Berlin industrial schools as a whole, we see that here, as elsewhere in Germany, industrial education does not shorten the period of apprenticeship, except in so far as (chiefly from the standpoint of the employer) the taking out of time for the school work may be said to do so. Generally speaking, the schools increase the interest of the pupils in their work, but this does not apply to all pupils, for in the compulsory-improvement schools many of the pupils are not there from choice and are lazy and indifferent. There is a special demand by employers for those who have studied in trade schools, wherever such study is optional, because of the greater skill and industrial intelligence thereby gained. This demand shows itself in the better positions and wages secured by those who continue in the trade schools more than the minimum period required.

Diligence in industrial school is practically necessary to pass the master's examination, which, as well as practical skill, requires theoretic knowledge which can be learned by most only in the schools.¹ This fact is a spur to some workers, but not to all, for the organization of modern industry, in Germany as well as in the United States, makes it hopeless for the majority of workmen to strive to become independent, or foremen, or technicians; and to be a master is only useful as a means by which to attain one of these stations. The

¹ Cf. curriculum of chamber of industry preparatory master's examination course, p. 104, above.

majority of German apprentices look forward to a lifetime as journeymen, or even as specialized factory workers who have not attained the legally defined journeyman's rank¹—i. e., passed the journeymen's examination.

The industrial schools have had a most salutary influence on the journeyman's examination in Berlin, which formerly was very poor.¹ The Germans set much store on these examinations, as furnishing definite tests of proficiency, theoretical and practical.

The school products are not sold, except in a few cases. Thus in the Berlin Cabinetmakers' School a student may sometimes sell his work, he in such case paying the school for the materials used. In most schools there are no considerable number of commercial products produced, and the schools usually prefer to keep the best work for exhibition. The view seems to be general that workshop instruction of a sort to be best given in schools and commercial production do not go easily hand in hand.

With minor exceptions, the Berlin industrial schools accept as students only those actually working as apprentices, journeymen, or otherwise, in the trade studied. There is thus no undue increase of the numbers entering single trades, for the number studying each trade is automatically adjusted to its needs. This is the case with practically all the schools I visited and studied in Germany. There is much unanimity on the question as to whether attendance on trade schools before the student has worked at the trade is desirable. Practical work in industry is always regarded as prerequisite to trade-school training received to good effect.

The expense of the industrial schools, though heavy, is regarded by the taxpayers as well worth while. The city provides the buildings in every case. The other expenses are shared as stated above. The expense per pupil is much greater in trade than in improvement schools, and, as is to be expected, higher in those trade schools having many shops and instructing advanced pupils than in others. The trade schools, higher and lower, enroll only about one-third the number of pupils that are in the compulsory improvement schools (11,754 to 31,466); while the proportion of apprentices in trade schools is also about one-third of those in the compulsory improvement schools (7,293 to 19,928).²

All classes of people are now well accustomed to the industrial schools and favor them. The masters formerly opposed them as a class, but now only a few individual masters do so. In no trade, as a whole, are the masters now opposed to the schools. As stated above, however, the masters prefer the trade to the improvement schools. They are not fully satisfied with the improvement schools, but

¹ Vorschulrat, Dr. Carl Michaelis.

² Übersicht, 1910, supplementary table.

not so dissatisfied as to be conducting a campaign for any change. The comparative attitudes toward the industrial schools of the industrial schoolmen and the employers indicates that these schools are the subject of chief interest to the schoolmen, but only one of a number of matters of importance to the masters.

Employers at first opposed compulsory attendance on improvement schools in the daytime. Now most of them have bowed to the inevitable and profess to like the new arrangement; but it is doubtful whether this professed satisfaction is always genuine. Employers are more or less favorable to the compulsory daytime attendance, according to the needs and exigencies of their trade, as has been described in the case of the Hamburg employers.¹

Masters, most of them guild members, are on the directorates of practically all of these schools. The guilds do not in Berlin, as in some other cities, supply models or materials for school shops, except in case of guild schools and a few others, but they maintain advisory relations with them, especially close in case of the trade schools.

¹ Cf. p. 24, ch. 2.

CHAPTER XI.

THE INDUSTRIAL SCHOOLS OF MUNICH.

Munich, the capital of the State of Bavaria (Bayern), is one of the most generally attractive cities of Germany. In 1905 its population was about 583,000. Brewing is its greatest industry, but many artistic handicrafts find here a home. Its chief industries include the manufacture of machinery, bronze, silver, and other metal ware, furniture, leather products and gloves, artificial flowers, printing and lithography, and glass staining. In Munich, as in south Germany generally, factories are less and handwork more prominent than in north Germany.

There were formerly guild schools in the city, but there now (1911) exists but one, that for painters. The former guild schools have been absorbed into the city school system with the approval of the guilds. The masters prefer the city schools, since they save them all expense except the slight aid which they give the city schools.

The Bavarian school law, under which the local ordinances of Munich have force, requires three years of attendance at Sunday school, immediately following the compulsory common school attendance, of all boys and girls not excused for adequate reason. The Sunday school provides a minimum of but two hours of instruction other than religious, and may be on Sunday or on week day. But the obligation to attend Sunday school may be fulfilled by attending an improvement school recognized by the district government as an adequate substitute, because it has not only special (trade) subjects, but enough of the general subjects characteristic of the Sunday school. The provisions of the National Industrial Law pertaining to compulsory improvement schools¹ are explicitly accepted and the compulsion of employers of boys and girls to allow them to attend such schools where local ordinance requires is reiterated.²

Munich has had an industrial continuation school for apprentices and an industrial improvement school for journeymen since 1875. These schools were for years but little specialized, while the apprentice school gave no trade instruction at the start. The present organization of the schools has taken its stamp from the original and resourceful personality of Dr. Georg Kerschensteiner, since 1895

¹ R. G. O., secs. 120, 129, 142. Cf. ch. 2, p. 81.

² Royal supreme law concerning school obligations, June 4, 1903; amended March 7, 1906. Text in *Bear*, pp. 19, 20.

superintendent of Munich schools. In 1900 Dr. Kerschensteiner won the prize of the Royal Academy of Sciences of Erfurt for the best essay on the subject of the most desirable education for boys between the common-school and the military-service ages (from the fourteenth to the twentieth year). This essay, *Staatsbürgerliche Erziehung der deutschen Jugend*, has been widely read, and in 1910 was translated into English under the title "Education for Citizenship."¹

In this book Dr. Kerschensteiner asks: "How must the modern constitutional State fulfill its functions?" The answer given is this: "By giving to everyone the most extensive education, one that insures (a) a knowledge of the functions of the State and (b) personal efficiency of the highest degree attainable."² His educational groundwork is stated elsewhere as follows:

The final goal of all public schools which are supported by public funds is the training of the pupils to be useful citizens. A useful citizen is one who contributes by his work, directly or indirectly, to the attainment by the State of its goal as a legal and cultural community. The first task of the school is the promotion, so far as may be, of the skill as well as joy in work of the pupil. The second task is the early accustoming of the pupil to placing his joy and skill in work in the service of his companions and fellow men as well as of his own. The third task is the connecting of the so-built-up readiness for service, consideration, and ethical devotion, with an insight into the purpose of the State, so far as such an insight can be developed in the pupils, considering their position and degree of maturity.³

The relation of means to end in Dr. Kerschensteiner's mind is shown best by an extract from an interview when he was lecturing in this country. He says:

The idea of industrial education is not the foundation of my work. The object of these schools is to train citizens. To train citizens it is necessary to enter into what is the daily life of 90 per cent of our people. Thus it becomes necessary to make the workshop the center of the school.

Again, in his prize essay, he writes:

As a means of insuring personal efficiency, and so of enabling a pupil to take that part in society which his capacities warrant, the first place must be assigned to a training in trade efficiency. This is the condition sine qua non of all civic education.⁴

In this trade training, the foundation for the civic virtues is laid in "conscientiousness, diligence, perseverance, self-restraint, and devotion to a strenuous life."⁵

The year after coming into office as superintendent of schools, Dr. Kerschensteiner called together the presidents of guilds, representing the local industries, and proposed to them that the city found a system of trade schools. They voted against him, but he finally won

¹ Fressland, A. J., translator for the Commercial Club of Chicago, 1910.

² Ibid., pp. 21, 23.

³ Kerschensteiner, Dr. Georg. *Organisation und Lehrpläne der obligatorischen Fach- und fortbildungsschulen/des Knaben in München, 1910. Einleitung*, pp. 5, 6.

⁴ N. Y. Times, Dec. 4, 1910.

⁵ Education for citizenship, p. 24.

them over. In 1900 he persuaded the city to reorganize its school system by the introduction of an extensive system of trade schools. There were factory schools in existence at the time, but as Dr. Kerscheneister says, they were inadequate, for they shaped the boy "for the factory, not for the boy."¹ In this connection it may be well to quote Dr. Kerscheneister's statement that "nowhere outside of Russia have I found such neglect of childhood as in England and America." To prevent such neglect in Munich, the industrial schools were established. Since the beginning of the school year 1906-7 they have been fully organized and in full operation.

There were in 1910-11 in Munich 55 trade improvement schools, including 2 commercial schools, whose attendance is compulsory for apprentices.² Ten compulsory district continuation schools meet the needs of the unskilled boy workers and of those in trades having too few apprentices to allow a separate school. One compulsory "help-school" aids weak-minded pupils. Twenty-three of the apprentice trade improvement schools have voluntary courses for masters and journeymen in connection with them, and there are other independent courses and schools for the same class of workers. Compulsory improvement schools are also provided for girls.

The boys' improvement schools and the journeyman and master courses are housed in seven large buildings erected for the purpose in different parts of the city.³ Some of the improvement school classes overflow into the common school buildings. The trade improvement schools are grouped in buildings according to related trades, though some trades are represented by several schools in different buildings. The school authorities profess themselves willing to organize a trade school for each trade having 25 or more apprentices. The most important trades have four schools, most have only one, while a few petty trades have no separate school, and their apprentices attend a school in common. The trade schools, with their groupings in the several buildings, are as follows:⁴ I. Liebherrstrasse Industrial School: (1) Turners, brush makers, and related industries; (2) druggists, and dealers in dye and other materials; (3) leather dressers and hand shoemakers; (4) wood and ivory carvers; (5) chimney sweeps; (6) coachmen; (7) saddlers and trunk makers; (8) coopers; (9) ironworkers (building and fine work); (10) smiths; (11) joiners and cabinetmakers; (12) shoemakers; (13) tapestriers, decorators, lace makers; (14) oven makers and setters; (15) watchmakers; (16) wagon builders. II. Prandlstrasse School: (17) Fine machinists, opticians, and instrument makers; (18) machine builders; (19) mechan-

¹ N. Y. Tribune, Dec. 4, 1910.

² Fünfter Jahresbericht der männlichen Fortbildungs- und Gewerbeschulen Münchens. 1910-11.

³ Value of land, buildings, and equipment, 1910: 4,824,099.85 marks (\$1,167,783.96). Jahresbericht, 1910-11, p. 19.

⁴ Jahresbericht, 1910-11, pp. 5-8.

⁵ The school that I visited.

ics, electricians, and gunmakers; (20) ironworkers (second department); (21) joiners (second department); (22) tinnern, installers, fitters' helpers, and metal stampers; (23) bookbinders; (24) book printers; (25) lithographers and stone printers; (26) photographers and chemists; (27) metal casters, brass founders, and chasers; (28) tin casters. III. Elisabethplatz School: (29) Coppersmiths; (30) machine builders (second department); (31) mechanics, etc. (same as 19, second department); (32) ironworkers (third department); (33) tailors; (34) joiners (third department). IV. Gotzingerplatz School: (35) Machine builders (third department); (36) mechanics, etc. (third department); (37) ironworkers (fourth department); (38) joiners (fourth department). V. Single scattered schools: (39) Bath assistants, hairdressers, and wigmakers; (40 and 41) hotel keepers (2 departments); (42) gardeners; (45) confectioners and pastry cooks; (46) butchers (at the city slaughterhouse); (47) musicians and music pupils. VI. Louisenstrasse School: Journeymen's and master's courses chiefly; also (48) masons, stone masons, and plasterers; (49) dentists; (50) jewelers, gold and silver workers; (51) stuccoworkers and sculptors. VII. Westenriederstrasse School: Journeymen's and masters' courses chiefly; also (52) decorative painters, lacquerers, gilders, and cask painters; (53) glaziers, glass, enamel, and porcelain painters. VIII. The Commercial Improvement School, embracing schools for (54) those in commerce; (55) clerks and Government officials.

All boys in Bavaria may leave the common school when they are 14 years old and girls when 13, unless they have completed it before. About three-fifths in Munich complete the course without repeating a year. They are then usually 14 or 15 years old. Of those who do not go to a higher education, about four-fifths enter industry or commerce as apprentices or clerks, and one-fifth become unskilled or juvenile workers. Every boy in Munich who need no longer attend the common school must attend a trade improvement (or continuation) school for at least three years immediately following the common school attendance, and generally, is an apprentice, throughout his apprenticeship. Under the National Industrial Law this obligation can not last beyond the eighteenth year.¹ Girls must attend improvement school for three years or at least until they are 16 years old.² Compulsory attendance for girls has been found as necessary for boys, to prevent employers wishing cheap labor from employing girls to the displacement of boys.³ Boys unusually well prepared may, on evidence of their proficiency, be advanced on entering a trade school a term, a year, or even two years. Those who have

¹ *U. O.*, sec. 120.

² Karschstein: *Fach u. Fortbildungsschulen Münchens*, pp. 5, 11; also: *Satzungen für die Fortbildungsschulen der K. Haupt- und Residenzstadt München, 1896*, sec. 20-21, p. 8.

³ *Satzungen*, sec. 20, 23, p. 8.

satisfied the nominal obligation to attendance, but who have not reached the proper proficiency, may be required to attend longer, but not longer than the completion of their eighteenth year.¹

The hours of instruction in the trade (including the commercial improvement schools range from 7 to 11 per week, in most cases, 8 to 10 hours, varying between the different schools. By municipal ordinance, none of the compulsory instruction is given after 7 p. m., though some voluntary classes even for apprentices are held later. There are almost no classes on Sunday. Most of the schools have classes from 4 to 6 hours consecutively, usually in the afternoon and early evening, though sometimes in the morning. The apprentices thus attend either about 2 half days or about 1 full day. The abolition from among the compulsory classes of late evening instruction improves the quality of the work done by the pupils. The school year is about 10 months.

The curriculum and general plan of the trade (improvement) school for fine mechanics is typical of these schools.² In this school opticians' and instrument makers' apprentices study 9 to 9½ hours 1 day of each week, closing at 7, for 4 years (in most of the schools for but 3 years). The subjects taught are as follows:³

Curriculum of the trade improvement school for fine mechanics.

Subjects.	Hours of instruction.			
	First year.	Second year.	Third year.	Fourth year.
Religion.....	1	1		
Business composition and reading.....	1	1	1	
Industrial arithmetic and bookkeeping.....	1	1	1	1
Ethics and civics.....	1	1	1	
Physics.....	1½	1½	2	2
Trade drawing.....	2	2	2	2
Practical instruction with study of materials and processes.....	2	2	2	4
Hours per week.....	9½	9½	9	9

Religious instruction imparted by a priest or teacher, Roman Catholic or Protestant, appointed by the religious authorities, is given in all the trade improvement schools. The business composition aims to give familiarity with business forms and practice in writing business letters. The reading is so selected as to have an ethical value and tempt the pupils to acquire the taste for good reading. The industrial arithmetic and bookkeeping is concerned with practical problems of computation of solids, keeping personal and business accounts, making business estimates and the like. The

¹ Satzungen, secs. 20, 23. p. 4.

² A complete account of the curricula of several other of the Munich trade improvement schools can be found in Bulletin, No. 14 Nat. Soc. Promot. Indus. Educa.: "The trade continuation schools of Munich."

³ Jahresbericht, 1910-11, pp. 120, 121.

ethics and civics (*Lebens-und bürgerkunde*) are designed to help the student to adjust himself to his environment, and include studies of hygiene, ethics, apprenticeship and industrial relations, history and present conditions of industry, the rise of mechanics, the town, district, State; and nation, and the rights and duties of the citizen relative to each. The physics is elementary and practical. The trade drawing is practical and receives much attention. Dr. Kerscheneiteiner says of this trade school as of the others: "Nothing is drawn that is not made in the workshop, and nothing made there that is not drawn."¹

The practical instruction aims to make the pupils acquainted by observation and practice with the chief materials, tools, processes, and products of his trade. According to Dr. Kerscheneiteiner: "We intend that the boy shall understand, at least once, every important process or method in his trade, and shall perform it himself, either in miniature, or, whenever possible, in real materials."² In the *Fine Mechanics' Trade School* the different kinds of iron and steel, tempering, defects, measurements, geometrical forms and their production, hand and machine tools, other metals, filing, turning, and other growingly complex measurements and processes are studied and practiced.

Other German industrial schools than those in Munich have workshops, and the presence of these is practically universal in higher trade schools, as those for journeymen or masters. Many other improvement schools also have workshops. But nowhere, as in Munich, do workshops in the improvement schools play so large a part throughout a comprehensive system as in the work of those schools. In most other German improvement school systems workshops are incidental. Here they are, as they are intended to be, the center and focusing point of the whole instruction.³ In number of workshops, in their general application to all the industrial trade schools, and in the time given to instruction in them also, the Munich industrial schools are regarded universally as the leading example of workshops in the improvement schools. Wherever in conversation the question as to the expediency of such shops was raised, the names of Kerscheneiteiner and Munich were quick to appear as the leading theoretical exponent and the practical example, respectively, of the system. I shall return later to the discussion of these workshops, the crux of the Munich industrial school system.

The practical classes average 12 to 15 pupils per teacher;⁴ the theoretical classes, 30 to 40. The trade classes were formerly larger,

¹ Kerscheneiteiner: *Fach- und Fortbildungsschulen*, p. 12. Teachers in the trade schools say this maxim is not carried out literally.

² *New York Tribune*, Dec. 4, 1910.

³ Kerscheneiteiner, G. "The organization of the continuation school in Munich," p. 19. In three lectures, etc.

⁴ With extremes of perhaps 10 and 24.

but were found to be unsuccessful. Where a school has more than one class of each grade, the better and the poorer pupils are placed in separate classes. Examinations, practical and theoretical, are held at the close of the courses, and certificates given to those who pass them.

The teachers of the theoretical subjects are almost all common school teachers; those of the practical (workshop) subjects are chiefly masters and journeymen of the respective trades. The teachers in the trade improvement schools (excluding the commercial schools) are classed as follows (June, 1911): Head teachers, 106; chief industrial teachers, 40; common school teachers, 103; teachers from industrial positions, 88; those from other positions, 29. Thus 88 out of 366 teachers in these schools are practical industrial workers—(masters and journeymen).¹ The practical men—masters and journeymen—who teach trades are required to attend for two years a class in teaching principles and methods, taught by a city school inspector. Some² teachers of trade subjects (such as trade drawing, study of materials, and industry and workshop instruction) are common school teachers who have learned somewhat of the technic of the trades in commercial shops. The masters are satisfied with all but these teachers but do not believe that they can give first-rate practical workshop and other trade instruction. The trade teachers are paid 96 marks (\$23.04) for each hour a week taught through the year. The other teachers receive specified amounts, from \$720 to \$1,300, with retiring pensions for long service.³

The relation of the Munich trade schools to the employers and guilds is peculiarly close. The chambers of commerce and industry nominate such guild members as are eligible to the school directorates, and each directorate must include at least one member (and may have as many as three) of the group of trades served by the school. The nominated body of eligibles, which includes most of the trade leaders in the city, may inspect the schools, advise as to instruction, propose trade teachers, take part in the oral and inspect the written examinations. The employers in each trade are also consulted as to the hours for the compulsory and other instruction most satisfactory to them. In return the employers are expected to aid the schools by advice, gift, or loan of materials, models, and tools, and by watching over the regular attendance of their apprentices or other boys and girls employed.⁴ At first, the guilds and individual masters aided the schools by supplying tools, materials, and models, and they still do so somewhat, but in the main they now find it more convenient to contribute instead small sums

¹ Compiled from figures in *Jahresbericht*, 1910-11, pp. 408-419.

² "A few only," said a teacher; "A growing number," said the chamber of industry.

³ Sadler, ch. 19.

⁴ *Satzungen*, Dec. 17, p. 7.

through their guilds. Masters who belong to no guild¹ must contribute a like amount directly.

The 10 district continuation schools are primarily for unskilled workers, though a few apprentices of scattering small trades attend also. They require attendance for eight hours a week for two years. Their several curricula differ but slightly, and are represented by that of the Plinganstrasse school:¹

Curriculum of the Plinganstrasse district school

Subjects.	Hours of instruction.	
	First year.	Second year.
Religion.....	1	1
Composition and reading.....	1½	1½
Arithmetic ¹	1½	1½
Ethics and civics.....	1	1
Gymnastics.....	1	1
Manual training and drawing.....	2	2
Hours per week.....	8	8

¹ Alternately 1 and 2 hours.

The arithmetic is designed to aid the pupil to keep his accounts and to understand simple dealings with banks, with the national insurance funds, and the like. The ethics and civics is much the same as for apprentices, but with no special application to any trade. The manual training and drawing aim to arouse the interest of the boys in things mechanical, that some may seek to enter the trades, and to prepare them the better for entrance into the trades and trade schools.²

The higher trade schools include day trade schools, and courses for journeymen and masters. Some of these occupy buildings devoted almost exclusively to them, while 23 are connected with improvement schools of the same trade. Attendance on all of these schools is purely voluntary. There is a day trade school for woodworking and interior furnishing, with 55 students, and a day trade school for artistic bookbinding with 25 students (1910-11). In each of the two large buildings given over chiefly to higher trade courses, there are both Sunday and evening schools for journeymen and masters engaged in industry, and day courses of 36 to 42 hours total duration for the same classes of workers when out of work. Two public halls give opportunity for drawing practice and for instruction for those in the building trades, one in free-hand and the other in trade drawing. All of these courses are arranged to suit the convenience

¹ Jahresbericht, 1910-11, p. 291.

² Kerschensztein: Fach- und Fortbildungsschulen in Deutschland, pp. 329-331.

of those to be benefited and thus are adapted to special trade exigencies. Short courses are quickly arranged, if need be, when any considerable unemployment causes temporary demand for them. Apprentices, when their period of compulsory attendance is over, liking the new freedom, usually do not attend any school for two or three years. Many move to other States. But a considerable proportion of journeymen, when they reach the age of 20 to 22, return to the public trade schools for further and voluntary work. Journeymen and masters up to 50 years of age are found in these schools.

Education for girls has not received much attention as yet in Munich. Improvement schools for girls require but three hours a week attendance, which period will be doubled from 1912 on. There is not large need as yet for industrial schools for women in Munich. They go into but few industries—the women's industries, as house-keeping and domestic service, dress and hat making, photography, etc., besides commercial work. Girls are free to attend the boys' trade schools, if they wish. Domestic science is the chief study in the compulsory improvement schools. A voluntary improvement school with general, commercial, and household subjects; a voluntary eighth class of the common school; and two private schools subsidized by the city—the Riemerschmid Commercial School and the Woman's Work School—also minister to the wants of girls and women.

There were in June, 1910-11,¹ in the 55 trade improvement schools, 9,330 pupils; in the 127 journeymen's classes, 2,733, of whom 450 were in day trade schools and courses; in the 10 district continuation schools, 1,018; in the compulsory improvement schools for girls, about 7,500. The total cost of all these schools, except those for girls, was in 1910-11 1,169,781.47 marks (\$280,746.55). This included 120,000 marks (\$28,800) for new buildings, repairs, and rent, but takes no account of the original cost, interest, or sinking fund, on a property in land, buildings, and furnishings valued at 4,824,099.85 marks (\$1,157,783.96). The cost in 1910-11, exclusive of existing permanent plant, for all pupils, except girls, was 98.42 marks (\$21.46) per pupil.² The pupils in the improvement schools pay no regular tuition fees, and but trifling fees for the use of materials, etc. Those in the higher trade schools pay small fees, as 50 cents to \$1 a month. The city common schools cost 93 marks (\$22.32) per pupil,³ which shows the improvement schools to be not very expensive in comparison. The taxpayers, however, sometimes grumble at these heavy expenses, but the city administration is liberal with the schools notwithstanding.

¹ Jahresbericht, 1910-11.

² Computed from figures in Jahresbericht, 1910-11; especially pp. 17-18.

³ Kerschsteinert: The Continuation School in Munich, in Three Lectures, p. 24.

The results of the trade improvement schools are evident in better work done by the apprentices, especially shown by better journeymen's examinations.¹ In 1907, the guilds or associations of master printers, tailors, shoemakers, and tapestrers declared that the journeymen's examinations were better on account of the improvement schools.² The results on specialization are favorable, enabling a specialized apprentice as a journeyman to learn another branch of his trade more quickly than he could do without the school training.³

The school attendance has been bettered by the change in the type of improvement schools, as has also the attention and zeal of the pupils in the schools. The employers differ as to whether this improvement extends also to the shops where the pupils work. The pupils quite generally like the schools, often better than the shops. The technical and especially the practical training (workshop) attracts them most. A number of masters or guilds claim to see an improvement in the conduct of the boys attributable to the schools.⁴

The masters regard these schools as equally efficient as the former guild schools.⁵ In general, with qualifications to be noted later, the masters are satisfied with the new industrial schools. One patent and avowed reason for the approval of the masters is that the public schools save them money formerly spent on guild schools. Most individual masters and the majority in most trades are fairly well satisfied with or at least tolerate the compulsory day instruction. Some trades as a whole, as the smiths and the wrought-iron workers,⁶ are actively opposed to this system because it disturbs their work greatly, the journeymen in these trades working always with the immediate aid of apprentices. The bakers, on the other hand, are actively for the day attendance, since their work is at night.⁷ More and more, as also in other cities in Germany, employers are coming not only to tolerate but to actively call for the use of working hours for compulsory instruction. Thus, for example, the guilds of copper-smiths, joiners, and typesetters declare the day attendance to be superior to the evening, and state or imply that it is worth whatever extra cost it involves to the employer.⁸ The employers in some cases pay the same wages to their apprentices or unskilled workers as if part of their working day were not given to school work. In most cases, however, the boy must accept a lower wage on this account.

Of the school workshops, the approval of the masters is much less unanimous and is generally more qualified when given. Of the opinions of guilds and other employers' associations, published by

¹ Handwerkskammer, Munich.

² Bericht über die Entwicklung der Fortbildung der gewerblichen Fortbildungsschulen Münchens, 1907, pp. 1-4.

³ Handwerkskammer, München.

⁴ Bericht über Berufsbildung.

⁵ Schlössers.

⁶ Bericht über Berufsbildung, pp. 2, 3.

the school board in 1907, a majority expressed approval of the technical training, but few specifically of the practical (workshop) training. Those guilds specifically approving the workshop instruction were those of the lithographers and stone printers, tin casters, druggists (of all Bavaria), wrought-iron workers, and butchers. Those specifically opposed to the workshop instruction were the guilds of fine mechanics and opticians, joiners, sculptors, and stucco workers,¹ and potters.² The most pronounced opposition came from the association of fine mechanical and optical businesses in Munich. This association declared that the apprentice thinks the school instruction only is of much value; that the practical instruction is not comprehensive enough to be of much value; that the drawing is the only technical training given of much value; that the school has not the equipment to teach specialized machine work, as gear cutting; that first-rate practical teachers can not be secured by the schools at the low salaries they pay; and that, finally, the practical work of the school can never be equivalent to that of a commercial shop.³

The eyes of all Germany have been on the Munich schools and their workshops, and many men in industrial schools and in industry in other parts of Germany have well-developed opinions on the Munich schools and have watched the results of their shops. The impression that has gone out does not seem, on the whole, to be favorable to the school shops. In the next chapter I shall discuss the general question of shops in the improvement schools; suffice it here to note some typical opinions on the Munich experiment.⁴ The Munich improvement schools are claimed to work in opposition, in many cases, to the training given by the masters, and to be regarded by the masters as not practical. The teachers are often primarily theoretical, and do not know thoroughly what they try to teach; and even when practical men, the school comes so to mold them that their teaching develops a theoretical tinge. The most extreme statement met was "the Munich experiment has failed, though some Munich masters approve of it."⁵

On the whole, the masters in Munich now approve of workshops in the schools, but only as aids to the theoretical instruction. As such aids they regard the school workshops as of proved value when in the hands of masters of their crafts.⁶ They do not regard these shops as practicable substitutes for training in commercial shops, and do not desire them to become such. Thus the positive declara-

¹ The representativeness of this view questioned by the school authorities.

² *Bericht über Berufsbildung.*

³ *Ibid.*, pp. 8, 9.

⁴ Also without discussing here any bias which the makers of these criticisms may have.

⁵ All of the views expressed in this paragraph are from chambers of industry or masters and guild members.

⁶ *Handverlehrsamt, München.*

tion of the bookbinders' guild: "The school can never serve as a substitute for the workshop training."¹ They are opposed to the introduction of the so-called teaching workshops (Lehrwerkstätten), where a boy just out of common school is to learn his trade entirely, with no apprenticeship whatever.²

The school authorities, and especially Dr. Kerschensteiner, take these school workshops much more seriously. They may have no idea of altogether displacing apprenticeship, but they certainly aim not only to aid the theoretical instruction but to impart positive practical instruction also. The fact that in some of the schools they go systematically over those elementary operations of the trade which would be taught and practiced in all shops³ indicates a more or less conscious endeavor to do what would probably be disclaimed were it put boldly: To teach the whole trade, and thus relieve the master of all burden of teaching his apprentice. This aim has certainly taken possession of one school official whom I questioned and represents his view of the aim and function of the schools. One of the greatest difficulties to be faced, were such a tendency to continue, and the school shops to be efficient enough, would be the acceptance of this condition by the masters, and the gradual shifting to public shoulders of the teaching burden formerly borne by the employer. To reshift this burden back again, were that desired later, might prove much more difficult than its assumption.

To the school authorities—which means primarily to Dr. Kerschensteiner—the practical or workshop instruction is the base of the whole superstructure.⁴ In it the interest of the pupils is to center (as it has largely done), and from it the theoretical instruction is to take meaning and shape. It is to be, chief, though the masters would have it subordinate. And why this great emphasis on the school workshops? The best reply is in Dr. Kerschensteiner's words:

The essential reason why the continuation school should not become a purely theoretical school is that its limitation to theoretical instruction would form an almost insuperable barrier to transforming our schools into educational institutions for community life.⁵

Here we see again Dr. Kerschensteiner's philosophy of education. His basic purpose is not industrial, but ethical and civic. It is no part of my present purpose to evaluate these schools from the ethical and civic standpoint, supremely important though that be. The theory looks sound, and the prospects of its successful working out seem good. But in the process is there not great danger that, as in our

¹ Bericht über Bewährung, p. 1.

² Handwerkskammer, München.

³ Thus in the school described above, for fine mechanics.

⁴ Bericht über Bewährung, p. 7. Kerschensteiner: The Continuation School in Munich. In Three Lectures, p. 19.

⁵ Kerschensteiner: Continuation School, p. 21.

manual-training movement, the industrial results may become but slight and the whole movement be or become dominantly cultural?

Of the journeymen and master courses and schools I need only say that they are quite satisfactory. Workshops in such schools are not subject to some of the difficulties that assail them in the improvement schools. Like more or less similar schools in the United States, these higher schools are generally recognized as efficient in their training of skilled journeymen, technicians, designers, foremen, and masters.

Finally, the trade-improvement schools of Munich must be looked upon as an experiment not long enough established to have final judgment passed upon them. Their future development and results on industry will be of the greatest interest to those desirous of promoting industrial education and efficiency the world over.

CHAPTER XII.

RESULTS OF THE INDUSTRIAL SCHOOLS.

Having shown the organization and the workings of the industrial-school systems in three important centers, I shall turn now to the wider field embraced by all the cities in which I studied the industrial-education situation, and present certain results which have come from the schools in these cities, the attitude of the industrial employers to them, and certain problems which have arisen as to their most efficient working. The data contained in this chapter are derived from my inquiries of chambers of industry, school directors and teachers, and others. The statements as to the attitudes of employing masters are almost always made on the authority of the local chamber of industry, the body of all others best fitted by intimate knowledge of and relations to the masters of the district to represent their views. What, then, have been the results, up to the present time, of this extensive plant and patient effort? Can we speak with assurance of these schools as institutions which have accomplished, in measure, that for which they were established?

In every city visited, and with regard to practically every school or set of schools of which the inquiry was made, the masters held that the industrial schools resulted in the training of better apprentices and more highly skilled workmen. These good results were not forthcoming in equal degree from all the schools. In general, the masters regard the results of the trade schools as superior to those of the improvement schools; and the results of the more specialized improvement schools, called sometimes trade-improvement schools, as superior to those more general in nature. The higher trade schools, again, are almost always spoken of with more enthusiasm and as showing more marked results in increased skill than the lower schools. This fact can be attributed to the greater age, maturity, and acquaintance with industry of their pupils, almost all of whom attend voluntarily, and thus only when they really desire to learn. The well-equipped shops in such schools may also explain their results in part.

In many of the improvement schools it was stated that the schools stimulate the interest of the pupils in their work, but in others the qualification was made that this was true not of all the pupils, but merely of the better sort. Some of the pupils attend merely because they must and take but little interest in the school work. So far as the results on the interest of the pupils is concerned school workshops seem to be of advantage, though the added interest engendered by

them in the school work may or may not in each case extend to the pupil's own shop. To the question if there was a special demand for pupils of the industrial schools the usual reply was: "Yes, where attendance is optional, but not where all the apprentices must attend." In a few cases it was stated that higher wages resulted from attendance on improvement schools; invariably this was the case with the higher trade schools. In Dresden an official of the Saxon ministry of the interior stated that the masters could turn out better work because of the training received in the schools by their workers.

The journeymen's and masters' examinations are looked to by the masters and schoolmen as concrete evidences of proficiency. They give definiteness to the results of the industrial schools. In almost all the cities visited it was stated that the industrial schools had improved the journeyman's examination, and in a few cities that they had also resulted in better master's examinations. In a number of cases the improvement in the journeyman's examination was said to be due directly to the improvement school. I was told in several cities that the examinations were better in the city than in the country. Part of this difference is due doubtless to the better industrial schools possessed by the cities.

The industrial schools, as a whole, have a salutary influence on specialization. The improvement schools, whose results in this respect do not compare with those of the trade schools, influence specialization chiefly by broadening the industrial outlook of the apprentices, giving them a more or less general understanding of the related branches of their trade. The trade schools, especially the higher ones, can and do as a rule teach enough of the practical as well as of the theoretical aspects of a whole trade or large branch to add greatly to the worker's industrial resource. As a result of the trade-school training, many workers are able, when necessity prompts, to learn more quickly than otherwise a related branch of their trade.

The general attitude of the masters toward the industrial schools is, in every case of which I learned, favorable. The employers usually prefer trade (improvement or other) schools to the more general types of improvement schools. In most cities the masters prefer the city industrial to the guild schools. Many of these now no longer exist, having been taken over by the city or died a natural death when the city schools became compulsory. The masters are saved money by the city schools, which they formerly spent on the guild schools, which pleases them. In most cases they regard the city schools as equally efficient to the guild schools or nearly so. In Coblenz the masters have no special preference for the guild schools, if only they have control enough to insure that the instruction be practical; that is, adapted to the needs of industry. In two Saxon cities, however, Dresden and Chemnitz, the masters prefer the guild

to the city schools. In Saxony the guild schools are numerous and important.

Attendance on compulsory improvement schools is being more and more shifted to the daylight hours. The superior advantage of the daytime to the evening for courses of this sort is intensified by the compulsory nature of the attendance. If all those between certain ages and engaged in industry and commerce are required to attend evening classes, as was the case throughout much of Germany till recently, certainly many will be present in the schools whose interest and endurance does not permit them to benefit from the extra tasks at the close of the day. Such has been German experience, and consequently we find compulsory improvement school classes shifted ever more and more into the circle of the hours of the working day, however closely guarded by employers. The reader who sees statements concerning some German schools, that they have no classes in the evening, should realize that by this the Germans understand not later than 8 p. m.

The attitude of the masters toward compulsory day attendance of apprentices and other youthful workers on improvement schools varies greatly between the cities visited, and somewhat between the several trades. In the earlier days of compulsion the initiative in securing legislation was usually taken by others than the masters, and the masters were in most cases opposed. In the last few years, since the experiment has proved useful to industry in many parts of Germany, the masters have in some cases even taken the initiative in seeking to establish compulsory attendance.¹ The attitudes vary from strong opposition, as in Dresden and Chemnitz, through the several stages of opposition, as in Barmen, Elberfeld, and Dortmund, to toleration, as in Berlin, Frankfort-on-Main, and Dusseldorf; to approval, as in Magdeburg, Leipzig, Munich, Coblenz, and Duisburg; to special desire for compulsory attendance, as in Plauen, Essen,² and Aachen (Aix la Chapelle). It must not be understood that all masters or even most masters in all trades agree in their attitude; the above statements indicate merely the general reaction to compulsory attendance. In Hamburg, Berlin, Munich, Barmen, and Dortmund it was specifically stated that the masters were not in entire agreement among themselves as to their attitude, and that in Elberfeld and Dusseldorf there was no unanimity at all on the matter. I need not here repeat what was stated in another chapter concerning the difference of attitude of masters in different trades in Hamburg,³ which

¹ As in Posen, in Saxony, and Essen. The handwork masters of Essen petitioned the mayor, July 18, 1910, asking that after Apr. 1, 1911, the city authorities extend the (improvement) school compulsion to all the apprentices of those trades whose guilds request such action for them. *Denkschrift des Essener Handwerks*, 1910, p. 12.

² The Essen masters oppose that provision of the local ordinance which requires the employers to pay their boys' tuition in the compulsory school. Ordinarily, though, they shift this to their apprentices.

³ Cf. pp. 14-15, ch. 2.

applies in greater or less degree throughout Germany, except to say that trades which receive the greatest benefit from industrial schools are among those which are most favorable to compulsory attendance, except where the disturbance to the shop work is greatest. In such case, as in some highly skilled machine industries, the great disturbance to the work often outweighs, in the mind of the employer, the admittedly great benefit of the technical training. The disturbance of work is generally greatest in the small shops, and for them, as for the larger shops, is generally lessened by allowing them to send the apprentices at different times. In general the tendency is toward the change of opposition into toleration, and toleration into approval, as the masters observe the results of the school training on their apprentices.

In Duisburg, Crefeld, and Aachen the voluntary industrial improvement school, which had preceded the present compulsory school, resulted in better average work than the present school, because most of those who attended the voluntary school were serious and earnest. The masters in these cities prefer the present schools notwithstanding, for they benefit a larger number of boys.¹

More and more also the masters are coming to prefer day to evening instruction. The tendency in this direction is not as yet marked, but it is undoubted. In Plauen, for example, the masters sought to have the improvement-school instruction given in the daytime, chiefly because they regarded such instruction as much more efficient than that given in the evening. The Leipzig masters prefer the morning to the afternoon hours, if there is to be day instruction at all, for in the morning the boys are fresher and learn better. In Munich and in Frankfort on the Main much of the instruction in the industrial improvement school is given in the morning, to the satisfaction of the masters. In the Frankfort Industrial School,² in the decade 1890-1900, before compulsory attendance was initiated, the director tried experiments in the hours of instruction. He offered courses first from 8 to 9 p. m., then alternative courses from 7 to 9, then from 5 to 7, then morning courses. Many of the employers, as these courses were successively offered, sent their apprentices to the earlier courses.³

In general, the attitude of employers to compulsory attendance of unskilled workers is much less favorable than in the case of apprentices, chiefly because what they learn is more general than industrial in nature, and their industries neither feel the need of nor can greatly benefit by this training. Nowhere did I find this spirit so marked

¹ Though the voluntary industrial improvement school in Aachen had at times an attendance of 4,000 to 7,000.

² A voluntary school for apprentices and journeymen, attendance on which, to those boys who meet special qualifications, frees them from the necessity of attending the industrial improvement school.

³ Herr Direktor Beck, of Frankfort Gewerbeschule.

as in the Ruhr Valley, tributary to the lower Rhine, and the seat of great coal mines, iron smelters, and steel mills. Here the proportion of workers classed as unskilled (ungelernte) is very high: in the Krupp works, for example, 75 per cent or higher.¹ In Essen compulsory attendance has only been initiated since 1910, and there the Krupp firm, though approving of the compulsion for their apprentices, is very doubtful whether it will be worth what it costs the firm for the unskilled workers. They are, it was declared, many of them dull, and not a picked lot like the apprentices. In Duisburg the factory owners are opposed to compulsory attendance of their unskilled workers, and the same attitude is characteristic of the coal, iron and steel, and similar industries throughout the region.

The problem of securing suitable teachers for the industrial schools is one of the most difficult with which the school authorities have to deal and is not fully solved as yet. This problem exists both in the improvement and in the higher trade schools, though the latter schools are nearer to its solution than the improvement schools. Theoretical subjects, such as arithmetic, bookkeeping, physics, and the general studies of industry have been taught almost universally by common-school teachers in the improvement schools. The masters are generally fairly well satisfied to have this class of teachers for the theoretical or book subjects. That they have in most cases no improvement to offer to the use of professional teachers for theoretical subjects is indicated by the fact that in guild schools in Dresden, where the masters have an entirely free hand to pick the teachers which suit them best, all the theoretical instruction is given by common-school teachers of the city. In Magdeburg and Chemnitz, however, the masters wish to have practical men, preferably masters working at their trades, impart the theoretical instruction.

Quite different is the problem for teachers for practical or definitely trade subjects, such as trade drawing, study of materials, and all workshop instruction. Skilled practical artisans, when otherwise qualified, have generally been sought to teach these subjects. Inability to secure enough such men has required the turning of common-school and other professional teachers to these branches also. To do this they prepare themselves in commercial workshops or in industrial schools (usually higher trade schools). Their teaching, however, of the distinctly trade subjects has been on the whole quite unsatisfactory to the masters. They stated that these teachers did not understand fully what they tried to teach, and that their teaching often ran in opposition to the teaching in the employers' shops. As a result of such criticism by the employers, the tendency is quite general to secure practical men for the practical subjects wherever possible. The present status may be realized by the statement that

¹ An engineer of the company.

of 14 of the cities visited, the teachers of trade or practical subjects were but few of them practical men in 3 cases, chiefly practical men in 6, and all of this class in 5 cases.¹ Of 13 cities where data on this point were secured, in 2 the masters (the opinion voiced generally by the chamber of industry) professed not to be satisfied, in 4 to be satisfied in part, and in 7 to be quite well satisfied² with the sort of teachers in the industrial schools. Most of the cases of satisfaction were in cities where all the trade instruction was given by practical men.

In some cases, as in Cologne, professional teachers with practical experience (as for a year) in handwork are satisfactory to the masters. Elsewhere the ideal is stricter. Thus the handworkers of Essen ask that the instruction in the improvement school in each trade be limited to study of the trade, trade drawing, arithmetic and principles of bookkeeping, civics, and business composition (not omission of workshop instruction), and that all of these subjects, except the civics and business composition, be taught by suitable teachers of the trade, trained in a (special) course.³ In Magdeburg the head of the trade and industrial schools stated that not only are professional teachers not in close enough relations with industry to teach in a practical way, but that practical men who devote themselves solely to teaching, get out of touch with industry, and their teaching becomes less practical. All, he said, should be working in commercial shops during the same period that they are teaching.⁴

It has proved very difficult to secure skilled practical men who are also well fitted to teach. In some few cases, as in Magdeburg, men have been secured with both qualifications; but in most cities it has been found necessary or desirable to require the practical men to study teaching principles and methods in a special class established for them, either before beginning teaching or during their term of service. In Frankfort the director of the industrial improvement school stated that the masters without special theoretical training are unable to give the proper trade instruction, and that they themselves recognize this inability.⁵ Frankfort had in session while I was in the city a course of four weeks' length which was attended by industrial-school teachers from all over the Rhine Valley. Dortmund has a similar course for the populous district of the lower Rhine.

The difficulty of securing skilled artisans for trade teaching, on account of the low salary paid in the schools, is also a real one. Some

¹ Few in Berlin, Elberfeld, Duisburg; most in Hamburg, Munich, Mannheim, Cologne, Dortmund, Aachen; all in Plauen, Frankfort on the Main, Coblenz, Barmen, and Mönchen-Gladbach.

² Quite well satisfied in Plauen, Frankfort on the Main, Cologne, Elberfeld, Barmen, Dortmund, and Mönchen-Gladbach.

³ Denkschrift des Essener Handwerks, 1910, p. 11.

⁴ Stadtschulrat Dr. Francke.

⁵ Direktor Neuschäfer.

men in industry, as the guild of fine mechanics in Munich, claim that the low wage keeps out all thoroughly skilled men. Elsewhere it was learned that though the salary is not what a skilled master, engineer, or other skilled practical man can earn in his prime, yet the security of the school position (after a year of probation) and the retiring pension which is granted in most cities enables the schools to secure men who can earn for the time being sometimes far more outside. Much of the teaching is also supplementary work, carried on for a few hours daily, with but little disturbance to the teacher's outside occupation.

In the higher trade schools the quality of the teachers, as is to be expected, averages higher than in the improvement schools, and there is usually but little criticism of the class of teachers engaged. Skilled artisans or engineers almost always give the theoretical instruction, while the practical is imparted by artists, engineers, architects, and the best professional teachers.

The problem of workshops in the industrial schools is one of the most important, if not now the most important, of all the present problems of these schools. The greatest variety of practice and aim is found with regard to school shops. In the higher trade schools workshops are the rule. In the lower trade schools also they very frequently exist. Such schools are intermediate in this respect to the higher trade and the improvement schools. In the improvement schools we find no workshops in some cities, as Berlin and Coblenz, and, in general, throughout Prussia. In Dusseldorf there are shops in the improvement schools for most of the trades, and in Munich every industrial improvement school has a shop. In most of the cities where I inquired as to this point the improvement schools have a few, but only a few, shops.¹

In practically all improvement schools, whether there were shops or not, there were more or less models and demonstrating apparatus. The trades for which these few shops were established were always from the same small group: Confectioners and pastry cooks (*conditorei*), barbers, tailors, bookbinders, and printers. These trades are those in which the maximum advantage is gained from school shops for the minimum cost, and are also some of those where the masters especially desire shops in the improvement schools.

Workshops are quite generally desired in the higher trade schools. The great point at issue is whether workshops are desirable in the improvement schools. Of the cities visited, the masters in Leipzig, Plauen, Munich, Cologne, and Dusseldorf wish plenty of workshops, or more than they now have. In practically all other cities visited the masters desire only a few workshops in the improvement schools,

¹ Chemnitz and Plauen in Saxony, Magdeburg, Cologne, Elberfeld, Barmen, and Dortmund in Prussia.

or none at all. In most cases a few are desired, as for the trades above mentioned. In a few cities, as Barmen and Elberfeld—strictly factory cities—the cost of school shops is a main objection. This high cost, which is generally admitted to be inseparable from most sorts of shops, constitutes an objection, even in places where more shops are desired, as in Plauen. In the main, however, cost of shops does not prevent their presence where they are greatly desired.

But they are not in most cases greatly desired. The attitude of the masters in Munich may be recalled. There is a party among educators who wish to have workshops in the improvement schools and train the pupils practically as well as theoretically. The extremists of this party wish ultimately to relieve the masters of most or all of the training of their apprentices, and to shift the burden to the school. The masters, almost to a man, are opposed to any such procedure. Thus the handworkers of Essen, in a memorial to the mayor, say: "The improvement school has the task of extending the workshop training and not of displacing it." And again: "The school instruction must follow the order of progress of the apprentice in his shop step for step."¹ The fear of some that more school workshops may lead to the teaching workshop (Lehrwerkstatt), which may become a substitute for apprenticeship, has led the masters in some cities to oppose the school shops more than they otherwise would.² And such attitudes are held, despite the realization of many masters that the school shops shift from their shoulders some of the teaching burden.

The reason for this opposition to school shops is in part that the teachers in these shops in some cases are men not practically trained. If all workshop teachers were practical men, there would be less objection by employers to school shops. In Barmen and Elberfeld the chief reason for opposition to school shops is the fear of conflict between teacher and master, such as is claimed by some observers to exist in Munich. But most of the shop teachers are now practical men, and their proportion is increasing. Neither large cost nor the kind of teachers accounts for most of the opposition to school shops, though each contributes its influence.

The main objection to shops in the improvement schools is that they are of little use during the first year or two of apprenticeship. The average boy of 14 and 15, not yet much versed in the ways of industry in general and of his own, in particular, can not, it is claimed,

¹ "The first year it should help the apprentice to find himself in his new environment—the shop, to recognize the tools and materials by name, form, purpose, and differences, and to comprehend the single process according to their order and to grasp the necessity of this order. The second year the emphasis should be on individual and more difficult (as mechanical) tools, properties of the chief materials, and working experiences. In the third year the goal should be set of giving the pupils a survey of the different spheres of work of their trade."—*Denkschrift des Essener Handwerks*, 1910, pp. 10, 14.

² As in Duisburg and Magdeburg.

benefit to any considerable extent from workshop training. If their first approach to practical work be in the school shop, they may become trained in habits unsuited to practical work if not actually harmful. Thus few schools can, and still fewer do, pay such close attention to economy of materials as commercial shops do from force of necessity. A habit of prodigality with materials may become ingrained in an apprentice from his school experience and be very hard to uproot. Most boys of 14 and 15 are not yet serious and interested enough to secure the good from school shops which such shops should give. And, finally, if there be one maxim more than another on which practically the whole structure of German industrial education rests, it is that some practical training in actual commercial work shall precede industrial school training.

In the case of the theoretical training of the first year of the improvement schools, this maxim is modified by substituting "accompanying" for "preceding," and some exceptions are found elsewhere in the system, as in the higher technical training in the technical high schools. For almost all grades and kinds of industrial training, however, the maxim is followed. Adherence to this idea is one of the keystones of Germany's success in industrial education. Whatever reason there is for its modification with regard to the first theoretical training of the improvement schools, there is less reason in the case of the shop training. For this can be secured in the shop of the master; the theoretical training generally can not be. The masters, as a rule, feel perfectly well able to instruct their apprentices adequately in the practical work of their trades; not so with regard to the theory. The theoretical background, now so necessary for proficiency, few masters have, the time and many have not the ability to impart adequately. The masters quite generally recognize this fact and call consequently for specialized theoretical trade training in the improvement schools.

In many cases the masters may not give adequate practical instruction to their apprentices, due to specialization; but such specialization does not exist to the extent that it does in the United States. Further, it is very doubtful how far shops in improvement schools can correct such specialization. Though the improvement schools tend toward this end even when lacking shops, and doubtless in greater degree when they have shops, yet the higher trade schools have most effect of this sort. Both for results on specialization and for general efficiency shops during the last year or two of improvement school courses are much more likely to be fruitful than those during the first year or two.

In the higher trades schools, workshops are desired chiefly not to furnish the basic training in the trade, but to give opportunity for

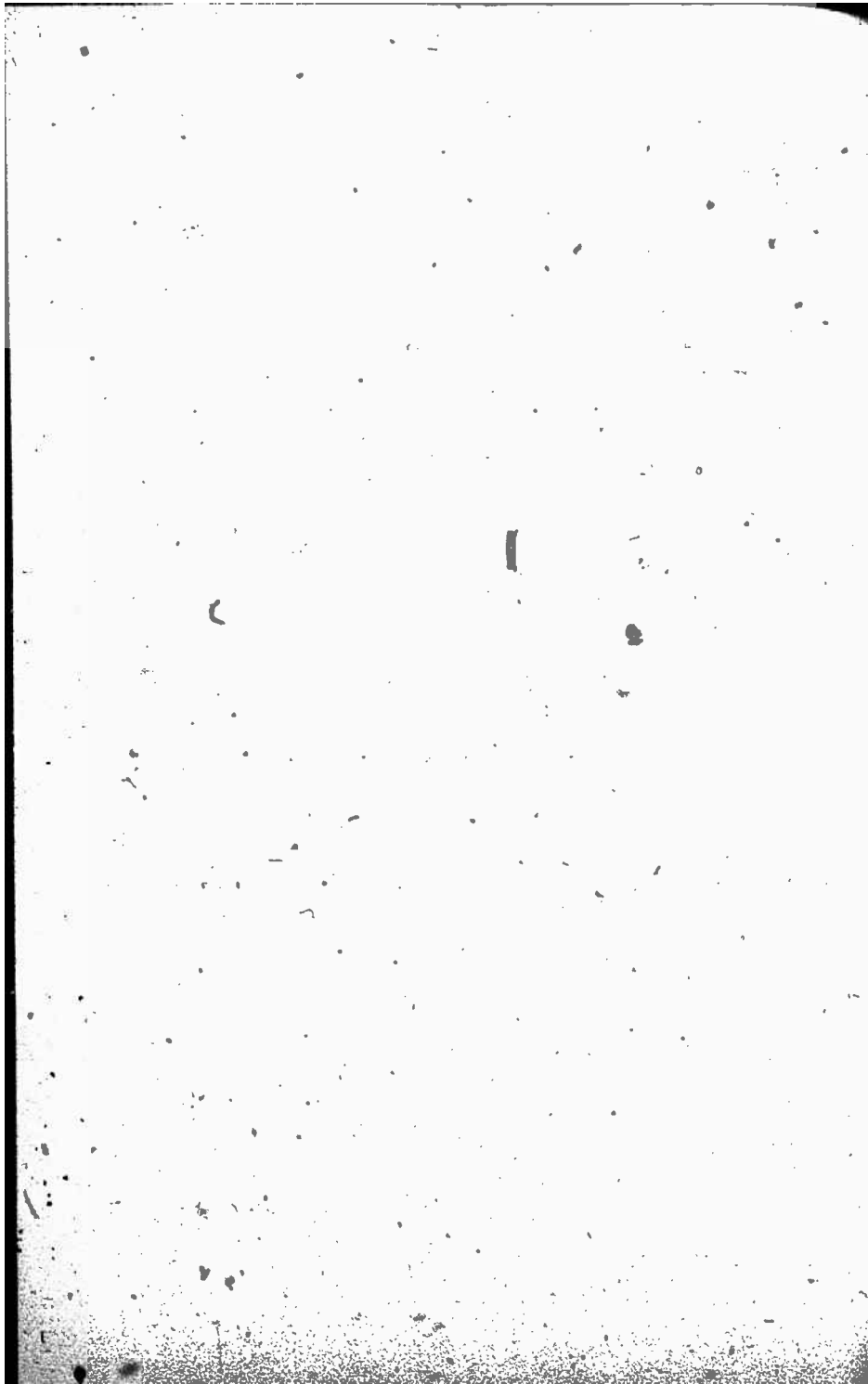
experimentation, working out new designs, learning of new or unusual machines, and the like. The school shop is in no danger in Germany of usurping the place of the commercial shop.

A director of the chamber of industry in Aachen made some significant criticisms of the industrial schools. He said that the school men try to include too much in the improvement school, especially too much theoretical instruction. Theory the masters must have, but they think that the period of apprenticeship is only the beginning of the worker's industrial education. The school men think of it largely as the conclusion, and therefore crowd exchange, study of industry, bookkeeping, etc., all into three years. With regard to school shops, he said that some trades or processes could be taught in them, others not. Wrought-iron working and saddlery could not well be taught in school shops. In some trades, as that of cabinet-making, some processes could be taught, others not. Thus, inlaying can best be taught in school, for the master has not the long time required; and also planing, sawing, and the like, but not the making of a chair or table.

A peculiar and significant method of practical training is followed in the industrial improvement school of Frankfort on the Main. The school has no workshops, and none are desired. The great cost of workshops is not the reason for their absence. Theoretical training is chiefly desired, but practical training is also obtained by a peculiar cooperation between masters and school. The pupils are assigned by their industrial teachers practical tasks—for example, in the first year of woodworking, joints in wood. These they must make in their master's workshops and bring to school. The school will supply materials, or pay the master their cost if he so requires, but ordinarily he does not do so. The pupils usually do these tasks during working hours, but the longer ones are sometimes done after working hours.

In general, all classes favor the industrial schools. The workmen warmly approve them. Though their expense is great they have won a place so high that support is as a rule, freely granted to them. These statements apply to the cities and not necessarily to the country. In the country the benefits to be secured, number of workers considered, are not so great, and the cost per pupil is greater. Consequently the country industrial schools are backward as compared with the city schools.

To sum up: The German industrial schools are achieving in large measure the purpose for which they were established—industrial efficiency. They are not yet through developing, nor are their types finally fixed. They constitute a living, growing movement, which gives every promise of increasing in fruitful results on industry and thus on the comfort and culture of the German people.



PART III. CONCLUSION.

CHAPTER XIII.

SOME SUGGESTIONS FOR OUR INDUSTRIAL TRAINING:

The best training now provided for industrial workers other than those definitely preparing for supervisory and technicians' posts, is probably that imparted in a few comparatively large factories where an enlightened and progressive policy of industrial training holds, and where apprenticeship and a factory school cooperate in supplying it. Such are the schools of the General Electric Co., Brown & Sharpe Manufacturing Co., and Baldwin Locomotive Works, in this country, and Siemens & Halske Co. in Germany. Such training we have seen is unfortunately feasible in but few cases. Excellent though this partial solution to the problem is, it does nothing for the mass of our industrial workers.

My inquiries into German industrial training have led me to wish that our own country had not allowed apprenticeship to go into such a decline, and to seek for its revival. Wasteful though the old apprenticeship was of the apprentice's time and effort, apprenticeship in its newer forms, both in Germany and the United States, has in it much of promise for the future training of industrial workers. It is the main reliance as we have seen of Germany in her industrial training, the industrial schools being but supplementary. A visit to Germany is an excellent corrective to the one-sided view often found in our country, which seeks to displace the shop by the industrial school.

Is it not possible to bring about a revival of apprenticeship in this country? It is undoubtedly desirable. No better way, or even as good, has yet been devised for the main training of the mass of industrial workers than in the shops where they are employed and by those who supervise their work. This statement holds of almost all industries, despite the ravages of specialization. Government action (State) might aid in bringing about the wider practice of apprenticeship. Apprentice laws, such as those of the German Empire, might be adopted by the States; or less detailed and thorough laws involving the minimum of Government action in the matter and the maximum of private initiative consistent with the purpose to be attained. But we must not deceive ourselves into thinking that

legislation alone can increase the practice of apprenticeship to any marked degree. Apprenticeship will grow in this country only if there is increased demand for it by boys (and girls) who enter industries, by their parents, and also by employers. Many or most employers, though desirous of obtaining plenty of skilled labor, are all too ready, on account chiefly of the exigencies of competition, to avoid the burden of training workers efficiently.

If those exigencies be so modified by law that all employers alike must pay in the first instance the cost of adequate training of any youthful workers whom they may employ as apprentices, then burdens on the employers will not be serious. Firms employing bona fide apprentices to-day find that their apprenticeship system pays, and indeed were it not so they would scarcely continue the system. In Germany apprentices are regarded as paying, and often as indispensable. This is in part so because adjustments have taken place there, such as would also occur here, placing on consumers or on the apprentices a portion at least of any undue burden at first borne by any particular class or group of employers. The burden might be shifted to consumers in part by raising the prices of products, but this tendency could have but a limited play, because of the tendency of demand to decrease with rise of price. Whatever expense or other burden is incident to the training of apprentices by their employers, being inseparable from and incurred only by their employment, would tend to be charged against the value of their services. The net or true value of their services to their employers would thus be the measure of the wages payable to them. This net value of the apprentice's service is usually very small at first; it increases at an accelerated rate, and sometimes at the close of an apprenticeship is almost as great as that of a journeyman. Thus any cost or burden of apprentice training by employers is likely generally to rest chiefly on the apprentices, in the form of lower wage than they could secure were they not learners as well as workers. The small wages which employers can pay apprentices constitute, as we have seen, a serious hindrance to the choice of apprenticeships by parents and boys, especially the latter. This hindrance can be overcome only by education as to the value of skill to the worker.

Apprenticeship, then, from the employers' standpoint, already pays some American employers, and can be made with appropriate laws equalizing competitive conditions in this respect to pay employers generally. Notwithstanding this prospect, a marked demand for apprenticeship is much more likely to come from the boys and girls and their parents than from employers.

In what way, then, if at all, is the demand for apprenticeship on the part of industrial workers to be greatly stimulated? For answer, I believe that the movement for vocational guidance now springing

up in the United States, and with every prospect of rapid spread, is likely to serve as the needed educator and stimulator of demand for apprenticeship. Vocational guidance is not the choice of a vocation for a child, nor the securing of a position for him, though free employment agencies are sometimes closely linked with the movement. It is the aiding of parents and child, by wisely selected data and sympathetic insight into the child's tastes and capacities, to choose wisely a vocation for him or her and to take the proper steps to prepare for it. The extent of this very young movement may be gathered from the facts that "movements to promote vocational guidance have been undertaken in New York, Boston, Chicago, Cleveland, Philadelphia, Pittsburgh, St. Louis, and several other cities," and that "the national conference on vocational guidance, held in Boston on November 15 and 16, 1910, was attended by delegates from 35 cities."

Apprenticeship has declined in recent years for two chief reasons: The employers in many cases refused to accept apprentices or made of their so-called apprenticeship a pretext for unskilled child labor, and the children (or their parents for them) refused to enter apprenticeships in view of the lower beginning wage secured there than in unskilled work. To minimize the latter cause is one of the chief aims of the vocational guidance movement. One of the fundamental failures of our present system is an ignorance of industrial facts on the part of many workers and their children and their shortsighted choice of occupations, almost regardless of the future. A dollar spent now in furthering this movement, designed to aid in every feasible way right choice by children and parents of a vocation, is likely to be of more value than several dollars spent in fully equipped and expensive trade schools.

Increased demand by workers alone for apprenticeship will not suffice to insure its real increase. Many boys now enter shops or factories as "apprentices" only to find that they have been misled and exploited, and are not really being taught a trade, or even a full branch of one. Such cases point to the legitimate function of the State and the way in which law can improve the prospects of apprenticeship. A thoroughly good and modern apprentice law can regulate the conditions of entrance upon and of leaving an apprenticeship, can say who may take and who teach apprentices, can protect both employer and apprentice against breach of contract or other illegal action by the other, and can insure that the training shall be adequate, so far as the degree of specialization in each shop and other conditions permit. The main function of such a law is to protect both parties, and chiefly the apprentice, in actually obtaining what

¹ 25th An. Rept. Com'r of Labor, Ch. XV, Vocational Guidance, pp. 411, 412. Also to be mentioned on this movement is: Meyer Bloomfield—The Vocational Guidance of Youth, 1911.

he seeks and what is claimed to be offered him.¹ Manifestly the execution of such a law requires dealing in technical matters, which is best treated by experts. For this reason semiofficial administrative bodies, made up of employers or of employers and employees, and established in the chief industrial cities or districts of each State, would be of great public service. The chambers of industry of Germany give us the object lesson as to what such bodies can do for industry; we may readily establish similar bodies, modified so far as seem desirable to meet our special needs and ideals. Thus to suit our more democratic practice and ideals, the employees might well be given a larger voice in such bodies than is the case in Germany; and indeed it is unlikely that organized labor would support such a plan were this not done. The German guilds again show us what local employers' associations, such as now exist widely in the United States, can do to further apprenticeship and aid State and chamber of industry in the efficient regulation of employers and apprentices alike.

Revival of apprenticeship alone will not solve the problem, and this chiefly for two reasons: One is the great need for technical knowledge in modern industry; the other is specialization. The need for technical knowledge can be best met in industrial schools. Specialization in industry is a much harder problem to deal with. It is, wherever present, the weak spot of apprenticeship. The Germans, with all their traditional allegiance to apprenticeship and well-rounded trade training, have been forced to capitulate with specialization. Their National Industrial Law declares that a master must train his apprentice in the whole trade for which he is apprenticed, *so far as that is carried on in the master's shop*. Much one-sided training results, which the schools correct in part by a broader view, and sometimes by broader shop practice. At best, specialization now permanently with us tends, with all its high efficiency, toward weakening narrowness for the specialized worker. What we should strive for is such broadening industrial training as will supplement the narrower range of skill and knowledge and give the specialized worker greater resource. Specialization is probably more widespread in the United States than in Germany, and this constitutes an added need which we have for industrial education greater than that present and recognized in Germany.

Industrial schools, then, we must have, and in far greater numbers, to meet the needs of far more workers than at present. Otherwise we can make little claim to really popular education of the sort closest to the worker's activities. Our citizens are already stirred to the

¹ Wisconsin passed, June 15, 1911, an admirable and truly modern apprenticeship law. This law is of such great significance for apprenticeship in this country that it is given in full in Appendix B. The results of this law, modeled on German experience, and to be studied in connection with the Wisconsin compulsory improvement school law of 1911 (the text of which is given at the close of that of the apprenticeship law), are of great interest to those concerned with the problems of apprenticeship and industrial education.

need for industrial education, as attested by a number of new schools recently founded by public funds, and numerous State commissions on the subject. Soon there will be much money spent on industrial schools; and when the American people want something badly, for public or private purposes, they spend money freely. There will be much opportunity for wasting of public funds by unwise choice of the kind of schools to be established and supported. What kind of schools, then, should we develop?

The present is a period of experimentation in industrial education in Europe, and even more so in this country. The nature of the subject is such that theorizing is relatively lacking in significance; experience is the safest guide. It is for this reason chiefly that German experience, probably the ripest and most fruitful in this field of any country, is of so much importance. We must speak cautiously as yet, till our experience be fuller, and must be content in large part to follow the method of experimentation. We must try all things, prove that which is good. Our country is so vast, and so varied in its industries, that there may well be considerable differences in the schools best suited to each section. Yet the types of school are likely to be the same throughout the country, and possibly so throughout the world. The needs of different industries, and even more of different pecuniary classes of workers, are likely to cause even greater differences in the kinds of schools desirable. We must have a number of different kinds of schools, and no amount of planning will enable us to foresee all the special and local modifications that may with advantage arise.

The kinds of industrial schools divide themselves according to categories as fundamental as any into whole-time day schools and part-time schools (day or evening). The importance of this distinction arises from the limitations to the number of workers who can afford to attend the whole-time schools. Possibly at least 30 per cent of the rank and file of workers in our great industrial centers can not, as judged by severe standards of living, afford to keep their children in day school any longer than the law requires.¹ A larger number think themselves unable; others do not think longer school attendance worth while, and thus add to the number of those who, by reason of choice or necessity, will not attend schools that keep them from earning. We can not predict the proportion that will attend day industrial schools; we may assume that it would be more than those who now attend the day schools beyond the legal requirement, but we may be sure that it would be but a small proportion of all industrial workers. German experience bears this out. We are richer per capita and more of our industrial workers may for that reason attend such schools than in Germany.

¹ Cf. ch. 4, pp. 44-45.

Numerous questions arise with respect to these schools. Shall they be primarily trade schools, aiming to teach the practice as well as theory of the trades, or primarily general industrial schools, giving only a preliminary training before entrance on apprenticeship? Trade schools have so far been the commoner in the United States. Though useful in their sphere, they are subject to serious objections not applying to other types of schools in anything like the same degree. They are very expensive. They usually teach but few trades, and can not teach many without a very great investment in plant, nor can they teach many trades economically without many students. They are subject, with probably no considerable justification in the cases of most, but still subject more than are other types of industrial schools, to trades-union suspicion. To teach a whole trade, they must keep the student three or four years usually, without wage, and even then he must usually serve a year or more as apprentice before becoming a journeyman. Certain phases of trade training, as learning economy of materials, acquiring speed, and numerous others in which few school shops can be fully adjusted to practical trade needs, make the school training no sufficient substitute for shop training. Certain of these difficulties are elastic; they can be and have been overcome, but at best the trade school which acts wholly or chiefly as a substitute for apprenticeship, as ours in the United States do or aim to do, forces itself into the sphere in which schools are weakest and commercial shops are strongest. The stronghold of the commercial shop is practical trade training; that of the industrial school is technical training. Each can undertake the functions in which the other excels, but with the risk of poor results, or what is tantamount, good results achieved at too great cost. Thus technical training is imparted to advantage in but few factories aside from the use of school methods, including the hiring of a special teacher or the turning of the energies of an official largely to the work of a teacher. Our trade schools in this country, in turn, have sometimes not been very practical, and this often because they used school to the exclusion of shop methods. The cost of trade schools is considerable, exceeding that of most other types of industrial schools chiefly in the item of equipment.¹ In addition to this cost, the total cost of trade school training should include the wages foregone by the pupil during the course. The sum of these costs has been great both in mass and also per pupil.

¹ Our data on costs of American industrial schools are very inadequate. An article by H. C. Brandon: "The cost of industrial education in the United States: A study of fifty typical schools," in *Teachers College Record*, September, 1911, reveals the confusion in the available data from school reports. It shows far greater variation in costs as between individual schools of a given type than between the median costs of different types of schools. The median cost of industrial education in all types of schools is found to be (exclusive of the important element of first cost of building and equipment) \$4.80 per pupil per month (based on enrollment), with a median variation of 125 per cent from the median. This figure may be compared with the cost (also excluding first cost of equipment) of \$3.30 per pupil per month (based on average daily attendance) in common schools, as stated by Prof. Strayer in "City school expenditures," and quoted by Mr. Brandon.

That boys and young men have entered and completed such schools at all testifies to the difficulty of securing adequate trade training otherwise and to the thoroughness of the school training in some cases. Specialization is largely responsible for the need for such schools. The greater degree of specialization in the United States differentiates our situation from that of Germany. For this reason we need more trade schools, or other schools imparting practical training, than does Germany. But it would be a great mistake to rush pell-mell into establishing trade schools for this reason without thorough investigation in each instance. The main task of practical instruction in industry is best fulfilled by employers.

The cause of practical industrial education would be forwarded by enacting and enforcing suitable apprenticeship laws, by bringing about cooperation between trade associations and the State for the regulation of apprenticeship, by aiding every effort of the vocational guidance movement, or otherwise to promote intelligent and far-sighted choice of occupation, and by providing cheaper and more effective schools for supplementing the practical training to be received in commercial shops and factories.

There is danger that the several States and communities of the United States will waste much money on industrial education; waste by expending great sums which will bring much less return than if spent otherwise, but with the same general aim of bettering industrial training. The greatest caution is imperative in considering the need and probable results and counting the cost in each specific case before increasing the number of trade schools. The trade schools that appear to give the greatest promise of success, both results and cost being considered, are those which might be classed as higher trade schools, designed primarily for the further education of such mechanics as offer themselves, having first learned and practiced their trades. But elementary day trade schools can not, I believe, be satisfactory as our main dependence for industrial education of the masses.

No sharp line differentiates general industrial from trade schools. But the types are different. The general industrial schools are much more feasible than elementary trade schools and, for the mass of workers, more serviceable than any form of trade school. Their course is generally shorter than that of a trade school, their training less specialized for distinct trades. So far as such schools have been established in the United States, which has been but a few years, they have no great number of branches or departments of training. In time they will probably develop more branches of training than the trade schools teach trades, for their training is less elaborate and expensive than that of the trade schools.

Much of the need for such general industrial or preparatory industrial schools has been taken up in chapters 2, 3, and 4. No school in Germany corresponds exactly to these schools, though some

trade schools approximate them. We have greater need than Germany for such schools. One of the greatest differences between the two industrial training situations in the two countries is that in Germany most boys and girls, whether entering skilled or unskilled industries, go to work at the age of 14, while in the United States few employers will accept apprentices for the skilled trades younger than 16. The German practice has become so rooted in habit that the Germans neither ordinarily question its expediency, nor do they generally give very definite reasons for the existence of the custom. Poverty is doubtless largely responsible for it, and in this respect we probably have the advantage. Probably a larger number of our families can afford to keep their boys from work until they are 15 or 16, if they consider this worth while, than in Germany. This possibility is to be regarded as a national asset. The question then arises: What shall be done with the years between 14 and 16 of those who leave the common school at the earlier age, and enter the skilled trades? The preparatory industrial school suggests an answer applicable to many boys and girls. A much larger number of boys and girls will probably be able and willing to attend a general industrial school for one or two years between the time when they leave the common school and the entry on apprenticeship in a skilled trade than would be able and willing to make the sacrifice for a longer trade-school training. Such attendance will cost both them and the public less than trade-school training, but will doubtless give the sort of practical as well as theoretical training which broadens the industrial outlook of the pupils and makes them familiar with the elements both of the theory and practice of a broad range of operations. Shops will be found in such schools though not necessarily such complex shops as in trade schools.

The training thus given, essentially preparatory, elementary, and broadening, can be made, I believe, the best gateway to apprenticeship training for a large number of workers. The pupils of such schools (and of trade schools) are most likely to be acceptable to employers as apprentices in the skilled trades. Both types of schools are likely to shorten the apprenticeship coming after school attendance, and such shortening, if not extreme, should not arouse the antagonism of the trade unions. Its type of work will also doubtless be of much value to correct the one-sided specialization to which many or most of its pupils will later be subject. One of the chief reasons for trade schools in our country is this need of correcting specialization. As stated above, we can not expect, by any sort of apprenticeship law or otherwise, to greatly change the extent of specialization in industry. However, the general industrial schools will, I believe, prove themselves as capable as the trade schools of correcting one-sided specialization. Certainly, if their result on each

pupil in this respect be nearly as great as that of the trade schools, it will be attained at less cost and will benefit greater numbers.

Both industrial and trade schools raise a question, one suggested by the almost invariable German practice of obtaining the first industrial training in the commercial shop. Shall we do likewise? Obviously for those of our boys and girls who enter the skilled trades at an age not earlier than 15 or 16 years, and leave common school at 14, this is impossible. For such youthful workers the best plan, if they can afford it, is to attend a general industrial or trade school during the interval. Wherever the particular situation does not forbid it, however, it is thoroughly desirable to apply the German principle. In passing, I may say that one point of distinct superiority of the German higher technical education (except in the technical high school) to that in the United States, is that in Germany a considerable amount of practical work must precede the theoretical. The truth of this superiority is beginning to be realized here, especially when the superior results are noted of cooperation between technical colleges and commercial shops, as in the case of the University of Cincinnati.

With only the types of schools so far discussed, we shall not yet have achieved really popular industrial education in large measure. The masses will probably be unable, will consider themselves unable, or will for other reasons fail to attend these schools. The type of school which best meets the needs of the great masses of industry, both skilled and unskilled, is the improvement school. The need for schools of this type is undoubted. More and more its virtues are being appreciated in this country. We now have such schools in Cincinnati and Boston, and in Wisconsin; they are advocated by educators for New York City, and we may expect their rapid spread. Their advantages are manifold. They can be made to meet the needs for industrial training of all not better cared for. They are flexible and require a comparatively small plant. They are cheap—an aspect of great importance. Industrial education is at best expensive, and its expense is likely to cause the undue curtailment of facilities in many localities, such that the needs of some workers will not be met. In the past we have furnished comparatively large facilities for industrial education for the few, but insignificant facilities for the many. In the past this direct neglect of the many was involved in the best use of small facilities. With but few industrial schools, the need for higher technical training was so great that some schools were drawn from service to the ranks of industry, to service of the technical leaders. The needs for higher technical training are now well met. The great present call is for such industrial education as will directly help the masses. The improvement school has been found in Europe,

and especially in Germany, to be the most efficient instrument for the attainment of this end. There is every reason to believe that a similar efficiency will result in this country from their establishment here. Industrial improvement schools, for reasons already fully discussed, should most certainly be in the daytime. German experience emphatically approves of this practice. Shall attendance be voluntary or compulsory? The history of compulsory daytime attendance in Germany will probably be repeated in the United States wherever the like compulsion is adopted: First, opposition from employers; later, acquiescence. The example of German and other employers who now tolerate or even desire compulsory attendance may and should make the period of adjustment of employers to the new situation shorter and easier. German experience has amply shown that voluntary improvement schools accomplished but little as compared with the same schools when made compulsory. The number of pupils reached was far greater and the average quality of work usually but little lower. However much many of our employers as men may wish to see the welfare of their youthful workers subserved, the stern necessities of competition force them not to do anything which will lessen the efficiency of their shops as measured in dollars and cents, and often force them even to neglect ultimate advantage for present gain. If we are serious in our desires to prevent exploitation of our child workers, one of the surest ways to protect them is to require their attendance at a school which will aid them to attain industrial efficiency. Such compulsory attendance might well be, as in much of Germany, for three years or until the ending of the term in which the eighteenth birthday is reached. The number of hours a week, the hours when these should meet, and the number of classes for pupils in different trades and occupations are matters to be decided locally and experimentally in large part. It may prove desirable to open the improvement schools first as evening schools, where the employers are strongly opposed to compulsory day attendance. Later, when they see the good results of these schools, the classes may be shifted to the daytime. Likewise the attendance may be voluntary for a time, until the schools have won the approval of the employers and others, and later compulsory. It is most probable that such schools will be first established in this country as voluntary schools.

The improvement schools can probably have separate classes, as in Berlin and Munich, for those in many different trades and occupations. They are much better able to do this than are full-time trade or general industrial schools, because they will have less extensive shop equipment and because the number of pupils in the improvement schools will probably far exceed those in other industrial schools. With regard to the comparative importance of improve-

ment and other schools, Dr. A. A. Snowden says, "throughout the civilized world the evening (or part-time day) industrial improvement school enrolls 20 pupils to every 1 who attends the other types of industrial vocational school."¹ The matter of shop equipment raises the question as to how much practical workshop instruction should be given in these schools. Without reviewing the German experience on this point, we may note at once a difference in German and American needs. Our industries are more specialized, and the need for correction of one-sided training is therefore greater. Such correction can best be done in schools, and to be at all efficient needs workshop instruction, for many of our workers never perform the operations of more than a narrow branch of a trade. Thus, in improvement schools, as in other industrial schools, workshops are more needed than in Germany. Whether this need is so great as to justify improvement schools in which most of the instruction is given in the school shop, and the lesser portion only is technical (theoretical) training, is very doubtful, but must be worked out by experiment. If our improvement schools have more workshops than those in Germany, as they should have, their cost will be correspondingly greater. Notwithstanding this greater cost, they will remain probably the cheapest and most efficient type of industrial school.

Intermediate between the improvement schools, which take but 4 to 10 hours a week of the worker's time, and the full-time trade or preparatory industrial schools are a number of part-time schools. The specific divisions of time between school and shop are various. These schools are growing rapidly, and with good reason, for they furnish for those pupils who can afford it one of the best means of learning thoroughly both the theory and practice of their trade. Such part-time schools are one of the chief contributions of the United States to the world problem of industrial education. Improvement schools may be classed as part-time schools, but the term is used chiefly for schools which occupy a larger portion of the worker's time.

The control of the industrial schools of all types is best vested, according to German and other experience, in some body or bodies not dominated by the schoolmen, but which receive the aid of competent educational experts. State aid, and accompanying measure of control and standardization, is likely to play a large and effective part in our future industrial education, as it has in Germany. Employers should be represented on school boards, as in Germany, but, as is seldom done there, workers also should be allowed a place. The industrial schools should keep in the closest touch with each of these classes. Only by such close touch with, and real control by, the two classes most directly affected can our industrial education be made both efficient and truly democratic.

¹ Rep. of N. J. Comm. on Indus. Educ., 1909, p. 7.

APPENDIX A.

A GERMAN APPRENTICE CONTRACT.

The following apprentice contract is executed between the firm of Friedrich Krupp, share company in Essen on the Ruhr, and (apprentice's name), born at (place of birth), to (name of parent), accompanied by his (parent or guardian, and name) as his legal representative.¹

SECTION 1.—The firm accepts (apprentice's name) as apprentice for their cast-steel factory and obligates themselves to have him trained as a (trade or branch in which apprenticed) under the direction of a suitable representative. The apprentice is thrown under the fatherly authority of the representative.

SEC. 2.—The apprentice is obligated to obedience and truth, to industry and proper conduct.

He must regularly attend, under the direction of the firm,² an improvement school, and present the certificate there obtained, immediately on its receipt, to the official set over him.

SEC. 3.—The apprentice is responsible for his support and for all other things necessary, with the exception of the tools necessary to his work.

He shall receive from the day of his entrance on apprenticeship³ pay for each working day, which shall depend on his conduct, ability, and efficiency, according to the following scheme:

Daily pay of apprentices.

Age of entrance.	Year of apprenticeship.		
	First.	Second.	Third.
	Marks.	Marks.	Marks.
Between 14 and 15 years.....	0.50-0.70	0.80-1.00	1.10-1.50
Between 15 and 16 years.....	0.70-0.90	1.00-1.20	1.40-1.80

Qualified apprentices may be allowed to undertake piecework in their third year, and for this receive up to 50 pfennigs a day in excess of their daily wage.

No subtraction from the wage of the apprentice shall be made for the working hours in which he attends improvement school.

SEC. 4.—The apprenticeship begins with the (date) and lasts three years. Work days in which the apprentice has neglected (his work) shall not be included in the reckoning of the length of apprenticeship, but so much more must be added. With good conduct and efficiency, the repetition of neglected days to a maximum of 25 may be remitted.

SEC. 5.—The first three months of the apprenticeship are a period of probation, during which either party may withdraw from the apprentice contract.

After the probation period the firm is authorized to discharge the apprentice at once before the ending of the contractual time in the cases stated in section 123 of the National Industrial Law (see supplement⁴), or when he has repeatedly violated his

¹ A guardian, to execute an apprentice contract, must receive the approval of the guardianship court.

² Before entering on apprenticeship in the Krupp works, a boy must first serve a year as errand boy or in similar capacity.

³ Sec. 123 is given in full; cf. ch. 7, p. 18.

duties of obedience and truth, industry and proper conduct, or neglected his attendance on improvement or trade school. (Sec. 2.)

SEC. 6.—On the part of the apprentice, the apprenticeship may be ended in the cases of section 124, numbers 1, 3, 4, and 5 of the National Industrial Law (see supplement),¹ and also if the firm neglects their legal duties toward the apprentice in a manner dangerous to his health, his morals, or his training, or misuses the right of fatherly authority, or becomes unable to fulfill their contractual duties.

SEC. 7.—On the close of the apprenticeship a certificate shall be given to the apprentice concerning the length of the apprenticeship and the knowledge and skill acquired during it, as well as concerning his conduct. An apprentice letter (Lehrbrief) shall be given only when the contractual period of apprenticeship has been completed or shortened with approval of the firm.

SEC. 8.—The firm reserves to itself the payment to the apprentice on regular completion of apprenticeship, when his conduct and efficiency was, according to the decision of the official in charge, good, of a reward not to exceed 150 marks.

The firm decides according to its free judgment whether the payment is to be refused wholly or in part, and whether it is to be made to the apprentice himself or to his legal representative.

SEC. 9.—Subject to the provisions of this contract, the apprentice is subject to all regulations for the workers of the cast-steel factory, especially the work regulations.

For other matters, so far as there are no regulations in the present contract, the provisions of the National Industrial Law apply.

SEC. 10.—Apprentices who remain at the steel factory after the close of their apprenticeship shall, on continued good conduct and efficiency, so far as possible, be given opportunity to train themselves further and to progress.

Essen/Ruhr, the (date)

.....
(Signature of the apprentice.)

.....
(Signature of the legal representative.)

Fried. Krupp
Aktiengesellschaft.
Das Direktorium.

The above apprentice contract is that used in the great Krupp works, employing 30,000 men, besides officials. The normal contract forms of the chambers of industry for handwork in Prussia are very long and provide for almost all questions that might arise under the apprenticeship. Their main provisions are presented in the exposition of the National Industrial Law, in chapter 7. Different forms of contracts are sometimes used for handworkers and for factory workers.

¹ Sec. 124 is given in full; cf. ch. 72, p. 16.

APPENDIX B.

THE WISCONSIN APPRENTICE LAW OF 1911.¹

SEC. 2377. Every contract or agreement entered into between a minor and employer by which the minor is to learn a trade shall be known as an indenture, and shall comply with the provisions of sections 2378 to 2386, inclusive, of the statutes. Every minor entering into such a contract shall be known as an apprentice.

SEC. 2378. Any minor may, by the execution of an indenture, bind himself as hereinafter provided, and such indenture may provide that the length of the term of the apprentice shall depend on the degree of the efficiency reached in the work assigned, but no indenture shall be made for less than one year, and if the minor is less than eighteen years of age the indenture shall in no case be for a period of less than two years.

SEC. 2379. Any person or persons apprenticing a minor or forming any contractual relation in the nature of an apprenticeship without complying with the provisions of sections 2377 to 2387, inclusive, of the statutes, shall, upon conviction thereof, be punished by a fine of not less than fifty nor more than one hundred dollars.

SEC. 2380. It shall be the duty of the commissioner of labor, the factory inspector, or assistant factory inspectors to enforce the provisions of this act and to prosecute violations of the same before any court of competent jurisdiction in this State.

SEC. 2381. Every indenture shall be signed:

- (1) By the minor.
- (2) By the father; and if the father be dead or legally incapable of giving consent, or has abandoned his family, then
- (3) By the mother; and if both the father and the mother be dead or legally incapable of giving consent, then
- (4) By the guardian of the minor, if any.
- (5) If there be no parent or guardian with authority to sign, then by two justices of the peace of the county of residence of the minor.
- (6) By the employer.

SEC. 2382. Every indenture shall contain:

- (1) The names of the parties.
- (2) The date of the birth of the minor.
- (3) A statement of the trade the minor is to be taught, and the time at which the apprenticeship shall begin and end.
- (4) An agreement stating the number of hours to be spent in work, and the number of hours to be spent in instruction. The total of such number of hours shall not exceed fifty-five in any one week.
- (5) An agreement that the whole trade, as carried on by the employer, shall be taught, and an agreement as to the time to be spent at each process or machine.
- (6) An agreement between the employer and the apprentice that not less than five hours per week of the aforementioned fifty-five hours per week shall be devoted to instruction. Such instruction shall include—
 - (a) Two hours a week instruction in English, in citizenship, business practice, physiology, hygiene, and the use of safety devices.
 - (b) Such other branches as may be approved by the State board of industrial education.

¹ Laws of Wisconsin relating to employment of women and children, industrial education and training. Wisconsin State Bd. of Indus. Educ., Bull. no. 1., pp. 24-26.

(7) A statement of the compensation to be paid the apprentice.

SEC. 2383. The instruction specified in section 2382 may be given in a public school, or in such other manner as may be approved by the local board of industrial education; and if there be no local board, subject to the approval of the State board of industrial education. Attendance at the public school, if any, shall be certified to by the teachers in charge of the courses, and failure to attend shall subject the apprentice to the penalty of a loss of compensation for three hours for every hour he shall be absent without good cause. It shall be the duty of the school officials to cooperate for the enforcement of this law.

SEC. 2384. It shall be lawful to include in the indenture or agreement an article stipulating that during such period of the year as the public schools shall not be in session the employer and the apprentice may be released from those portions of the indenture which affect the instruction to be given.

SEC. 2385. If either party to an indenture shall fail to perform any of the stipulations, he shall forfeit not less than ten nor more than fifty dollars on complaint, the collection of which may be made by the commissioner of labor, factory inspector, or assistant factory inspectors in any court of competent jurisdiction in this State. Any court of competent jurisdiction may, in its discretion, also annul the indenture. Nothing herein prescribed shall deprive the employer of the right to dismiss any apprentice who has willfully violated the rules and regulations applying to all workmen.

SEC. 2386. The employer shall give a bonus of not less than fifty dollars to the apprentice on the expiration of the term of the indenture, and also a certificate stating the term of the indenture.

SEC. 2387. A certified copy of every indenture by which any minor may be apprenticed shall be filed by the employer with the State commissioner of labor.

This apprentice law, the most advanced in the United States, is in several respects very like the German national law, described in chapter 7. It is to be studied in connection with the Wisconsin compulsory improvement school attendance law of 1911, which is here given:

CONTINUATION AND EVENING SCHOOLS.¹

(SECTION 1728c-1) 1. Whenever any evening school, continuation classes, industrial school, or commercial school shall be established in any town, village, or city in this State for minors between the ages of fourteen and sixteen working under permit as now provided by law, every such child residing within any town, village, or city in which any such school is established shall attend such school not less than five hours per week for six months in each year until such child becomes sixteen years of age, and every employer shall allow all minor employees over fourteen and under sixteen years of age a reduction in hours of work of not less than the number of hours the minor is by this section required to attend school.

¹Laws of Wisconsin relating to employment of women and children, industrial education and truancy. Wisconsin State Bd. of Indus. Educ. Bull. no. 1, p. 10.

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